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Railway Bills and Improvements

THE chief interest in the notices of new railway Bills lies in their connection with the great Government-supported improvement schemes for London suburban traffic and outside. Of the London £35,000,000 scheme an illustrated outline was given in our issue of June 7 last. In this the London Passenger Transport Board, and the London & North Eastern and Great Western Railway Companies are concerned, and the necessary powers in furtherance of the individual parts of the scheme are being taken in separate Bills by these undertakings. Proposals of the London Passenger Transport Board were described in THE RAILWAY GAZETTE of last week. The statutory notice of the L.N.E.R. (London Transport) Bill shows that powers are being taken by that company to borrow £10,000,000 from the London Electric Transport Finance Corporation Limited (the creation of which for the purposes of the scheme was mentioned in THE RAILWAY GAZETTE of July 19 last) in order to carry out electrification and other improvements in North and North-East London. Great Western Railway borrowings from the Finance Corporation for the purpose of the Ealing & Shepherds Bush Railway extension and other attendant works will be £2,000,000. In the £30,000,000 scheme of improvements outside London each of the four main line companies is taking part. This scheme was described and illustrated in THE RAILWAY GAZETTE of November 8 last, and for the purpose of carrying it out a finance company is to be formed from which the L.M.S.R. proposes to borrow £9,000,000, the L.N.E.R. and the Southern £6,000,000 each, and the Great Western £5,500,000. Included in the scheme are two new railways by the Great Western, electrification of the L.N.E.R. Great Central line between Manchester and Sheffield, and of the Wirral lines of the L.M.S.R. Apart from these schemes, each of the four main line Bills takes general powers, and the L.N.E.R. is also promoting a Scottish Provisional Order dealing entirely with Scotland, which is outside the present improvement scheme.

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No "Watered" Capital in British Railways

In an editorial article on this subject in last week's issue we referred to the article written by Mr. W. V. Wood, Vice President, Finance and Service Departments, London Midland & Scottish Railway, in *Modern Transport*, in which he replied to recent articles by a correspondent in that journal. It has been pointed out to us that our introductory remarks might be interpreted by those who had not seen the whole of the series of articles, including Mr. Wood's final article written at the request of the Editor of that paper, as implying that the Editor of our contemporary endorsed in any way the views expressed by his earlier correspondents. Nothing, of course, was further from our intention. In fact, our reference to this matter was made in appreciation of the good service performed by our contemporary in being the means of refuting once again the ill informed criticisms which appear from time to time on the subject of "watered" capital in British railways.

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The Week's Traffics

Substantial increases in coal class traffics of the four main line companies and good increases in merchandise receipts of the L.M.S.R. and L.N.E.R. for the past week have brought the gross earnings of the four companies together for the 48 weeks of the current year up to £139,250,000, an increase of £1,266,000, or 0·92 per cent., comparing with an increase of 0·88 per cent. at the end of the previous week. On the other hand, the decreases or only moderate increases in passenger train takings of the four companies for the past week have brought the percentage increase to date in this class of traffic down from 2·02 per cent. to 1·98 per cent.

		48th Week				Year to date	
		Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	
		£	£	£	£	£	%
L.M.S.R.	–	4,000 +	14,000 +	24,000 +	34,000 +	717,000 +	1·30
L.N.E.R.	+	6,000 +	11,000 +	22,000 +	39,000 +	155,000 +	0·38
G.W.R.	–	9,000 +	2,000 +	13,000 +	6,000 +	206,000 +	0·89
S.R.	+	2,000 –	1,500 +	500 +	1,000 +	188,000 +	1·01

Great Northern (Ireland) traffics for the year to date show an increase of £53,600, and Great Southern earnings an advance of £113,704.

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Netherlands East Indies Tramways

The reports for 1934 of the principal tramway and light railway companies in the Netherlands East Indies make far from cheerful reading, revealing a state of affairs that may without exaggeration be called alarming. The economic crisis in the colonies continued, and the stagnation in many industries caused a heavy decline in most classes of traffic. Should this go on much longer, it looks as if some sections of line at least will have to cease working. Vigorous efforts are being made to reduce expenses and attract what traffic is available in the face of severe competition from taxis, buses, and the increasing use of cheap Japanese bicycles. The staffs were again reduced, so adding to the vicious circle of unemployment, less spending power and, in turn, less traffic. The suspension of public works, such as harbour improvements,

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has reduced the number of workmen travelling and materials conveyed. The sugar industry remains much depressed, but some increased activity in a few directions lent a little brightness to a generally gloomy picture. Authority has been granted for an increase in the speed of the trains on some sections, which it is expected will give the light railways some advantage over other methods of transport. The results obtained for the current year are unfortunately not encouraging, and the future of the undertakings remains a matter for grave concern.

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Overseas Railway Traffics

The Central Argentine Railway in the past fortnight has turned its previous decrease of £4,714 into an increase for the year to date of £16,966, and the Buenos Ayres & Pacific during the same period has added £5,167 to its previous increase. A net improvement of £3,481 for the two weeks has brought the Buenos Ayres Western decrease down to £27,868 for the year to date, but the Buenos Ayres Great Southern traffic position is worse by £6,975 net than it was a fortnight ago. For the 22 weeks of the current year the Argentine North Eastern has an increase of £14,783 and the Cordoba Central one of £12,140, but the Entre Rios increase has been reduced to £578.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific ..	22nd	74,501	+ 3,741	1,620,253	+ 110,213
Buenos Ayres Great Southern ..	22nd	107,873	– 7,916	2,630,842	– 44,728
Buenos Ayres Western	22nd	49,530	+ 5,086	875,826	– 27,868
Central Argentine	22nd	115,038	+ 15,269	2,578,193	+ 16,966
Canadian Pacific	48th	729,400	+ 63,200	23,619,400	+ 652,000
Bombay, Baroda & Central India	33rd	238,725	+ 16,650	4,978,425	+ 14,925

Canadian Pacific gross earnings have improved by £81,000 in the past two weeks, but the net earnings from January 1 to the end of October are down £427,000.

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Timetable Display

Advocates of simplified timetables, on whose side Lt.-Col. Gilbert S. Szlumper of the Southern Railway ranged himself in his recent presidential address to the Railway Students' Association, might find a more reprehensible abuse of their patience in the principles guiding the display of schedules at certain stations. There is at least one London terminus where the time sheets of suburban services are tucked away in the darkest corner of the booking hall, while at some provincial and country stations the traveller may be excused for supposing that the timetable is a natural growth (possibly the "wild thyme" referred to by Shakespeare) which thrives best, like mushrooms, in the absence of light. We recently hunted one of these elusive phenomena at a London suburb and after finding no times of down trains were exhibited on the down platform, at last ran them to earth on the up side, in the shadow of a weighing machine which stood between them and the nearest source of light. On other occasions we have noticed that where economy has dictated the lighting of alternate platform lamps only, those which might have illumined timetables have actually been extinguished. Rectification of these points would be simpler than tampering with the honoured institutions of "Bradshaw."

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Bristolian Punctuality

Once again the practicality of high speed schedules in Great Britain has been proved by the consistently punctual running of the Bristolian service of the G.W.R. since the train went into service on September 9 last. A correspondent who has made ten journeys on the down train records that with one exception the arrival has never been more than 42 sec. late nor more than 76 sec. early; the exception in question was on a morning when signal alterations were in progress at Bristol, and although the Bristolian came to a stand just outside Temple Meads in 104 min. from Paddington, it was 4½ min. later that it reached the platform. One run included a dead stand for adverse signals at Westbourne Park, but notwithstanding this and other delays, Bristol was reached a minute early, and the net time on this run, allowing for these checks, was 100 min. for the 118·2 miles start to stop. In the ordinary course of the down run, speed remains consistently above the 70 m.p.h. level for 90 miles on end, and the "King" class 4-6-0's are proving themselves just as capable of evenly sustained high speed as the "Castles" have so long displayed on the Cheltenham Flyer. On one journey, a remarkable example of acceleration—particularly as the engine was starting "cold"—was given out of Paddington by *King James I* with the customary load of 218 tons, Langley, only 16·2 miles away, being passed at 85 m.p.h., and Slough, 18·5 miles, in 17 min. 17 sec. from the start. On another occasion a maximum of 95 m.p.h. was reached in the descent of Dauntsey bank; but on an unchecked run it is easily possible to maintain the 105-min. schedule without even touching 80 m.p.h. It is also pleasant to note that patronage of the train steadily increases, especially in the first class.

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Diesel or Steam for High Speed?

Controversy still rages as to the relative merits of steam and diesel propulsion for high speed services, and the matter is not likely to be settled to the satisfaction of both sides till a good deal more practical experience has been obtained. Indisputably in favour of the diesel are its lighter weight, lower centre of gravity, and more rapid deceleration. The last gives it a shorter braking distance and makes permissible higher speeds without alterations to signals. The lower centre of gravity similarly allows diesel vehicles to travel on curves at greater speeds than would be desirable with a steam locomotive, with its inevitably higher centre of gravity. Light weight is a marked attribute of the diesel, although with very careful designing the weight of a steam train, relative to power developed and accommodation provided, can be reduced considerably below what has hitherto been usual. To the credit of the steam engine must be placed its lower initial cost, its greater flexibility in normal railway service, and, in coal producing countries, the fact that it will burn indigenous fuel. Its running costs on the other hand are almost inevitably higher, for the steam engine is not anything like so efficient a heat engine as the diesel, and, at any rate in its orthodox form, it requires two men where the diesel can be driven by one.

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Diesel Advantages in Practice

To the foregoing technical considerations must be added those qualities of the diesel which have been demonstrated under operating conditions. As some compensation for the much higher initial cost of the diesel compared with the steam train, the greater availability of the former may be quoted. For example, the Burlington Zephyr does the double journey between Chicago and the Twin Cities twice daily, a total mileage of 862, whereas on the Hiawatha and "The 400," the two competing steam services, the locomotives used make a maximum mileage of 422 a day. Thus it may be said that, although the first cost of the Burlington Zephyr was much higher than that of the steam trains, its effective cost in operation is very different. As to reliability, it would seem that with the latest diesel productions there is now little to

choose between them and steam. No final judgment can in the present stage of development be passed on the relative merits of the two forms of traction for high speed services, especially in view of the very great variation in local conditions. What is beyond dispute, however, is that the public demand for higher speed and greater frequency of train services is not likely to abate, and of those who are called upon to cater for public demand, the most enterprising will probably reap the greatest reward.

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Unrehearsed Efficiency

It is, perhaps, in an emergency that the qualities which make for efficient railway operation are afforded the maximum scope for effective display. On the last Saturday in September the L.N.E.R. 2-8-2 locomotive *Earl Marischal* was working the 10.20 a.m. express from Aberdeen to Edinburgh when some minor trouble developed as the train approached Montrose, and it was decided to detach the engine. The loads taken by the two powerful 2-8-2 engines between Edinburgh and Aberdeen are considerably in excess of those which can be handled by any other type, and on this occasion the tare weight of the train was 479 tons. Furthermore, the only locomotives available at Montrose were a small tender 0-6-0 freight engine, No. 9776, and the Inverbervie branch tank engine, both of North British origin. The former was therefore attached in front, and the latter backed on in rear, for the start from Montrose begins with 1½ miles up at 1 in 88, followed by 1¼ miles at 1 in 111. Leaving Montrose 6 min. late, the two engines struggled up to the summit, and from there No. 9776—whose maximum rostered loading is 230 tons—worked the heavy express unassisted to Arbroath. Here a small 4-4-0 was found as a pilot, and Dundee was reached 28 min. late. Now this train carries through coaches for London and Penzance, and the authorities at Dundee had made all arrangements to run these portions forward speciaily; after 6 min. spent in detaching the coaches concerned from the back of the train the run to Edinburgh was made in 77 min. By this recovery of no less than 22 min., Edinburgh was reached at 1.57 p.m., only 5 min. behind time, and there was thus no delay whatever to the London express leaving at 2.5 p.m., to which these through coaches are attached.

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The Safety Record of the U.S.A. Railroads

For the third time in four years, there were no passengers killed in a train accident on the railways of the United States during the first half of the year. What a contrast this is to the records of thirty years ago, when, according to " The Safety of British Railways," the total figures for the years 1902 to 1907 inclusive were respectively 167, 164, 270, 350, 182 and 410 passengers killed in train accidents. The numbers of railway servants killed in train accidents for those years were 697, 895, 844, 798, 879 and 1,011. The present record is 42 servants killed in the first half of 1934, and 28 for January-June of this year. Mr. J. J. Pelley, President of the Association of American Railways, in a statement drawing attention to this year's figures, reports that the passenger traffic for January-June was the largest since the first six months of 1931, and aggregated 8,600 million passenger miles, an increase of 22·7 per cent. over the low level of the first half of 1933. There is, we consider, no doubt that the increased use of track-circuit-controlled signals, especially on single lines, has been the main factor to contribute to this improved state of affairs. In 1902, for instance, there were 5,402 collisions, which figure had risen to 8,026 in 1907. Two other factors have, most likely, also contributed; one is the institution of inquiries into accidents by the Bureau of Safety of the Interstate Commerce Commission, followed by the publication of their officers' reports; the other is, we suggest, greater discipline among the men, and their greater respect for rules and regulations.

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Sperry Rail Detection in France

In a paper read at the recent Rail Congress at Budapest, an interesting survey was given by Mr. H. H. Munro of the work of the Sperry detector car which has been at work in France. To the time when his statistics were compiled, the car had been run over 4,550 km. (2,826 miles) of track, and had discovered 1,885 defective rails—an average of one to every 2·4 km. (1½ miles) tested. These defects were divided up in the proportion of 20 per cent. transverse fissures, 17 per cent. horizontal fissures, 62½ per cent. vertical fissures, and ½ per cent. miscellaneous defects. The high proportion of vertical fissures points to the prevalence of piping and segregation in the rails, as distinct from the transverse fissure caused by cooling strains, which it is the primary aim of Sperry detection to discover. Of particular interest is the fact that, whereas in the old 30 kg. per m. (60 lb. per yd.) rails tested, dangerous defects were found, on the average, once every 270 metres, in the most recent type of rail, weighing 48 kg. per m. (96 lb. per yd.), the incidence of defects has fallen to one in every 48·2 km. tested. With all allowance for the fact that by the shorter life of the latter a certain percentage of the fissures may not yet have had time to grow to a dangerous size, this great difference witnesses both to the efficiency of modern methods of retarded cooling now applied in France, and to a general improvement in French steel production methods. No difficulty has been experienced in detecting on chaired tracks, nor over lines laid with steel sleepers, nor, yet again, over electrified lines on which the rails are used for the return of the current.

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328-Ton Locomotive on 76-lb. Rails

In our issue of November 8 we briefly referred to the 4-14-4 type locomotive recently built in Russia, which, in working order, weighs 328 tons. In planning this engine the fact had to be kept in mind that it must be able to operate on existing light track, where the rails weigh only 76 lb. a yard, as to relay with rails weighing 100 lb. or more, and replace the present light bridges, was considered prohibitive. There were numerous other restrictions, details of which are given in the article on page 963 of this issue, and thus the problem of working out the design presented unusual difficulties. Calculations showed that a locomotive to meet the rated demands would require about 138 tons of adhesion, and a rated tractive effort on starting of 88,000 lb.; moreover, as the axle load had to be limited to 20 metric tons, it at once became apparent that the adhesion weight would have to be distributed over seven axles. As stated in our earlier reference, the engine was built at the Lugansk locomotive works, and has already undergone some trial trips. It is estimated that it will be capable of developing a maximum horsepower of about 4,000. During its trials, hauling a train of 1,400 short tons, a speed of 25 m.p.h. was reached on a heavy grade, under which conditions the locomotive developed 3,000 h.p. The diagram on page 963 shows the main features of the design, and an interesting comparison might be drawn between the performance of this engine and the very powerful Beyer-Garratt locomotive built in this country and put into service in Russia in 1933.

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Western Australian Government Railways

THE healthy tone of business generally in Western Australia is reflected in the increase of £392,524 in the earnings of the Government Railways for the year ended June 30, 1935. All classes of traffic shared in the improvement, and a considerable tonnage of goods which had been lost to the railways during the past few years owing to the unbridled competition of motor lorries was regained as the result of the operation of the Road Transport Act. To earn the additional £392,524, or 13·45 per cent., cost only £196,238, or 8·97 per cent., extra in working expenses, and the net revenue of £929,095 gave a return on capital of 3·61 per cent., the best return since the year 1927-28, when the figure was 4·28 per cent. The operating ratio for the year under review was the lowest since 1924-25, when it was 70·10 per cent. The duplication of track between Spencer's Brook and Northam (5 miles 73 chains) was brought into use on September 2, 1934. For the third year in succession there was a substantial increase in passenger journeys and earnings. Country journeys increased by 11,822 for £29,327, due mainly to increased travel to and from the goldfields, and in the suburban area the journeys increased by 761,452 and earnings by £7,604. In goods traffic the increase in tonnage and ton-miles was distributed over almost all commodities carried, but the improvement from 119·85 miles to 124·77 miles in the average distance hauled was mainly due to wheat, timber, first and second classes. In receipts per ton-mile the increase from 1·56d. to 1·59d. was due to the greater quantity of higher rated goods.

Following upon the introduction of legislation to co-ordinate transport services and in anticipation of the relief which would be derived from the elimination of unrestricted road competition, reductions in rail freights to the extent of £50,000 per annum were made from July 1, 1934, the alterations taking the shape of the abolition of the highest —3rd class—rate, and transfer of commodities classed thereat to second class. With the actual withdrawal—as from January 1, 1935—of competing road services, rates were again reviewed, and on March 1 a new goods rates book, embodying further concessions, was issued. Second class has been reduced to first, and first class to C; livestock freights for distances exceeding 400 miles, and the miscellaneous class rate (including bricks, road metal, &c.) for distances up to 20 miles have also been reduced. The cumulative effect of the earlier and later concessions is estimated to reduce railway revenue by £105,000 per annum, but the Commissioner of Railways (Mr. J. A. Ellis) reports that the expectation of this amount being recouped by additional traffic bids fair to be realised. Some railway operating figures are compared in the accompanying table:—

	1934–35	1933–34
Average miles	4,359	4,351
Train-miles	6,024,887	5,522,276
Ton-miles	362,251,783	317,869,539
Passengers	12,876,378	12,103,104
Paying goods, tons	2,803,316	2,559,060
Operating ratio, per cent.	71·95	74·90
	£	£
Passenger receipts	563,687	526,756
Goods and mineral receipts	2,274,828	1,937,782
Total earnings	3,311,839	2,919,315
Working expenses	2,382,744	2,186,506
Net revenue	929,095	732,809
Interest charges	1,028,569	1,008,453
Net loss	99,474	275,644

There was an increase of expenditure under every head. In the maintenance of way and works the increase over 1933-34 is slight, but the total expenditure was £59,122 greater than in 1932-33, indicative of the efforts made to keep abreast of full maintenance of tracks, buildings, &c. The advance of £49,718 in rolling stock expenditure was due to heavy repairs on locomotive, carriage and wagon stock. With regard to transportation and locomotive power, the additional expenditure of £124,712 was necessary to provide for the improved business, increased wages and coal payments and extra haulage of water. For the first time in the history of the railways the train mileage exceeded 6,000,000, the previous record—5,984,139—being obtained in the year 1928-29. With the advent of the Transport Act the department was seized with the importance of providing an adequate train service both for passengers and goods, and that this has been done is exemplified by the absence of any serious complaints from the public.

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Goods Transport

SO much has been written about the very early local railways being built primarily for goods traffic, and carrying passengers as a secondary consideration, that it is apt to be overlooked that the great trunk lines were concerned chiefly with passengers and in certain cases actually carried no goods for some time. Even when goods transport was introduced, it was mainly in the hands of carrying companies; for example, on the London & Birmingham Railway, goods traffic began in 1839 by the transfer to the line of some of Pickford & Co.'s extensive canal traffic, shortly after Mr. Joseph Baxendale of Pickford's had been appointed Manager of the railway. Mr. Wyatt of Pickford's was subsequently appointed Goods Manager and the railway began to carry goods on toll for some of the other important carriers. Sheds were erected for the large carriers, for which they paid a rental; and Pickford's built their own premises on land at Camden bought earlier by Mr. Baxendale in anticipation of the change from canal to rail. Chaplin & Horne became Goods Agents for the Grand Junction Railway, and had suitable accommodation provided for them at Camden. Some idea of the arrangements may be gathered from the series of advertisements from *The Railway Times* of 1845 which we reproduce on page 960. The Cheap Trains Act of 1844, designed to cover all but mineral railways, defined passenger railway companies as those deriving one-third or more of their gross revenue from passengers; the actual passenger proportion of most of the main companies was far in excess.

The position was aptly summarised by Acworth in his "Railways of England" when he said "as a rule, on the great through lines, in 1843, everything except passenger traffic was a very secondary affair. The Great Western was earning £13,000 a week from passengers and only £3,000 from goods. On the London & Birmingham the goods receipts were much the same, but the passengers returned some £15,000 . . . On the South Western the proportion was 6 to 1; on the Brighton more than 7 to 1; on the South Eastern more than 10 to 1. Even on the Midland Counties and North Midland . . . five-eighths of the whole receipts came from the coaching traffic." However, celerity in transit seems to have been a feature of very early days, for the *Times* of Liverpool recorded in 1843 that 200 tons of merchandise were handed to the Grand Junction Railway at Liverpool on Saturday afternoon, and delivered in Birmingham nine hours later. Goods traffic was begun on the G.W.R. in a small way in September, 1839, chiefly through the agency of carriers. It did not expand greatly during the next decade and early in 1850 the report of a Committee of Consultation remarked that it did not think "sufficient means have been taken to bring goods traffic to the line." Goods

totals then were about one-third of passenger. In the same year the new office of Goods Manager was created, and Mr. A. J. Drewe appointed to it. Within five years the G.W.R. goods traffic was doubled and in 1855 it totalled about £436,000, against £849,000 for passengers.

Both Pickford & Co. and Chaplin & Horne, which played important parts in early railway goods transport, were road carriers, the former mainly of goods and the latter of passengers. Chaplin & Horne came into existence as a firm after the introduction of railways and as a direct consequence. Benjamin Worthy Horne, who succeeded his father in 1828 as proprietor of Horne & Company, and William James Chaplin, the owner of Chaplin & Company, were at first opposed to railways and in 1835 subscribed to the activities of *The Anti-Rail-Road Journal* to which we referred in our issue of November 1 last. They were far-seeing men, however, and, with the opening of the London & Birmingham Railway, changed their attitude, withdrew their coaches from the Birmingham road, and formed the firm Chaplin & Horne as the official parcel booking agent to the railway company. Chaplin also sold his South of England coaches and invested heavily in the L.S.W.R., of which he became Deputy Chairman and then Chairman. From 1847 to 1857 he sat as M.P. for Salisbury, mainly to serve the L.S.W.R. interests. He was also a Director of the Paris & Rouen, Rouen & Havre, and Rhenish Railways. After the amalgamation which formed the L.N.W.R. on July 16, 1846, it was decided to abolish the system of toll carrying, and in 1847 this railway began goods carrying directly for the public. Pickford & Co. and Chaplin & Horne were appointed as cartage agents and also to work the goods sheds in London. It was not until the end of 1877 that the business of Chaplin & Horne as Goods and Parcels Agents for the L.N.W.R. was transferred to the company, which thereupon (as announced in the time books for January, 1878) began its own delivery throughout the metropolis; Pickfords remained General Cartage Agents of the L.N.W.R. until 1900.

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Tapered Locomotive Boilers

A CORRESPONDENT recently criticised the tapered form of locomotive boiler, alleging that its initial and maintenance costs are greater than those of the parallel type of barrel, and further, that in some examples at least, the widening out of the boiler diameter at the firebox end is prone to lead to staybolt troubles; he even went so far as to say that instances had been observed where only one-and-a-half threads of the staybolt were really effective. We confess that we are unable to follow this second line of reasoning, it being difficult to appreciate why the shape of a boiler barrel should have any effect of the kind implied on the staying of the firebox. The contention seems to be that owing to the increased diameter where the barrel joins the firebox, the amount of taper, or, as it was put, "run in" of the firebox towards the rear, is greater; and this, it is suggested, may in certain cases influence the shape of the firebox as a whole, awkward bends, affecting the staybolt layout being necessitated, so complicating the staying of the firebox and increasing the possibilities of trouble.

First, however, with regard to the question of cost, experience has shown that when the boiler shop staff is accustomed to manufacturing boilers with tapered barrels, practically no increase in the initial cost is incurred, although doubtless when a change-over is made on a large scale from parallel to taper boilers, it is necessary to instal a certain amount of new, or to alter existing, plant, whilst the introduction of a new method may very often be attended by a certain amount of primary expense. This, however, is compensated for by the fact that the maintenance costs of tapered boilers have been found in practice to be, if anything, lower than those of the parallel type, and, of course, that is a factor which ultimately determines the matter from the economic point of view. The same correspondent stated that in his view a tapered boiler barrel was not worth while, inasmuch as when everything has been taken into account, it effects very little, if any, saving in weight, complicates the manufacturing processes, and certainly detracts from the appearance of the locomotive. The last point is, of course, a matter of opinion, but with regard to the others, even though, as alleged, no weight saving was effected, it would be found that generally speaking a more efficient boiler had been secured on the same weight basis. We, however, believe it to be a fact that if comparisons be drawn between tapered and parallel boilers of equal capacity, the first is usually lighter.

The principal claim made on behalf of the tapered boiler is, of course, that its cross sectional area is greatest at the point where the heat transference values are highest, and that more steam space is provided where it is most wanted, namely in the immediate vicinity of the firebox. There is also some improvement in the water circulation, and added to all these factors, the boiler barrel is of reduced size and weight where it is least effective, namely at the opposite end near the smokebox. There is a further point which, although contested, appears to be worthy of mention. We have ourselves noticed in riding on large locomotives that the tapered boiler tends to improve the driver's outlook, and that the wedge-shaped space behind the chimney assists in lifting the smoke and steam clear for the reason that it facilitates the circulation of air over the top of the boiler behind the chimney. It is not without significance to note that where tapered boilers are used, deflector plates on each side of the smokebox, a very popular fitting with the modern high pitched parallel boilers, are usually omitted. In very large boilers it is an advantage, also, to be able to fit a chimney of reasonable height, if only on grounds of appearance, apart from any question of draught, as of course the overall length of the chimney may not be affected by the reduced height of the smokebox.

We may now turn to the criticism levelled at the tapered boiler on the ground that it introduces staybolt difficulties. It would, of course, be a serious matter if exaggerated staybolt trouble was set up as a direct result of using this form of boiler barrel. We have already remarked that, to us, there seems no reason why the shape of the boiler should affect the staying of the firebox, but even assuming that it did, it would involve only the normal process for all boilers of ensuring that the holes for the staybolts in the inner and outer fireboxes are correctly aligned, and the stays properly fitted. So far as the tapered sides of the firebox are concerned, there is no difficulty in staying these so long as the stays are put in at right angles to the copper firebox plates. It may be necessary when manufacturing new classes of fireboxes to mark off the stay holes after the firebox is assembled, and drill them from the inside of the copper box, through the copper plate into the wrapper plate, in which case full thread values are secured in both plates. Thus, as has already been remarked, everything depends upon getting the holes in proper alignment, for if these holes are in the slightest degree of opposing angularity to one another, or to any extent out of line, it will naturally be impossible for all the threads of the stays to engage properly with the corresponding threads in the plates. Experience has shown that provided due care is taken when carrying out the work, a very high degree of

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accuracy can be obtained. It is sometimes the practice to drill the holes undersize and on the flat, and then, when the plate is shaped and assembled, the holes are reamered out before tapping, the reamering tool being pushed through the two plates at the same time. We have examined fireboxes assembled on this principle without detecting any want of alignment between the stay holes in the copper box and the corresponding ones in the outer steel firebox plate. This, we have pointed out, affects the building up of all fireboxes, without regard to the form of boiler barrel, and from investigations we have made at various times we have never been able to find a case in which locomotives with tapered boilers have as a consequence had more staybolt or other firebox failures than is usual with all types of locomotive boilers doing equal work. In this connection it is worth while recalling that the tapered boilers fitted to some large and hard worked express engines in this country give from 150,000 to as much as 212,000 miles before being taken off the frames for heavy repairs. The matter is one of some importance in view of the controversial nature of the locomotive boiler question as a whole. Locomotive boiler efficiency does not, of course, entirely depend upon the shape of the barrel, but rather upon the disposition of the effective heating surfaces, and the maintenance of an adequate supply of steam in all circumstances, whilst anything that can effect a reduction in coal consumption without materially increasing the cost of building and equipping the boiler is to be welcomed. Seeing that in practice the use of the tapered boiler tends to increase rather than diminish, it can be regarded as certain that the advantages we have endeavoured to outline are sufficient to outweigh any disadvantages, either real or supposed, that can be advanced against it.

* * * *

The Trend of Railway Transport*

AMID the perplexities which today beset the road travelled by the purveyor of transportation, some reliable sign posts are in process of erection through the investigations made by many bodies of able men all over the world, to review what Professor Lloyd Wilson terms "the transportation crisis." Of such investigations are those of the Road and Rail Committee, presided over by Sir Arthur Salter, which resulted in the Road and Rail Traffic Act of the United Kingdom; of Sir Felix Pole, who reported on transport in Northern Ireland; of the United States Government's Co-ordinator of Transport, who has reported extensively on local conditions; of the technical press and of various committees, governmental and otherwise, which have been independently constituted for this purpose in almost every country. Of these, one of the most comprehensive reports is that of the Argentine Railways Investigation Committee. The recommendations of this committee in respect of railway operating are of interest in that they enunciate some principles, which are, in effect:—

(*a*) The closing down of unremunerative stations.

(*b*) The substitution of lighter units for services over non-paying stretches of line.

(*c*) The substitution of road for rail services where branch lines are unremunerative.

(*d*) The introduction, by the railways themselves of door-to-door collection and delivery services in large centres.

(*e*) The elimination of any "special rates" which are no longer justified under the unit costs of providing the services.

(*f*) The introduction of modified staff arrangements so as to allow of its best utilisation during hours of duty.

(*g*) The relieving of lightly worked railway sections from the full technical requirements of more heavily worked ones.

(*h*) The revision of railway working arrangements with a view to eliminating any non-vital regulations which tend to hamper operation and/or increase its cost.

Additional principles which have been recommended by other investigatory bodies are:—

(i) The non-retention of obsolete locomotives, but the retirement of such irrespective of age, as rapidly as funds allow, substituting motive power embodying the technical advances of the last decade.

(ii) The abolition of unnecessary formalities so as to make the performance of transport as simple and painless as possible to the passenger, the consignor and the consignee.

Individual and national requirements must modify any general principles. These provide an insight into transport needs of today. Government-owned railways, however, are not free, as are privately-owned ones. They cannot invest in the stock of competitive road or river or coastwise interests, as can be done by company-owned systems. While such combinations are apparently looked upon with favour in the United Kingdom, as forming an economic balance, the United States Government appears to frown on them as not being in the best public interest.

* From the Annual Report of the General Manager, Mr. G. V. O. Bulkeley, C.B.E., M.I.Mech.E., on the Government Railway and Colliery of Nigeria for the financial year ended March 31, 1935.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

The Norwood Junction Accident

3, Pope's Folly,
Brighton.
November 27

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I was very interested in your illustrated reference to the accident that occurred to the City Limited when the Portland Road bridge at Norwood Junction collapsed on May 1, 1891. It recalled to my mind the great pluck displayed by *Hayling's* driver, Harry Hargreaves, a Brighton man, in safely rushing the train across. There were many business men injured, but no one killed. In appreciation, it is worthy of record, of the driver's presence of mind the passengers collected the sum of £110, which was afterwards presented to the train staff. Driver Hargreaves received £70, and was publicly thanked for his great effort.

Yours faithfully,
ALFRED KEEPING

NORTHERN IRELAND TRAFFICS.—On railways wholly in Northern Ireland, the number of passengers (exclusive of season-ticket holders) carried during the first eight months of 1935 was 4,188,063, against 4,030,771 for the corresponding period of 1934, and receipts from passengers were £192,340, compared with £183,337. Merchandise and minerals carried in the first eight months of 1935 were 359 183 tons, against 360,364 tons in the corresponding period of 1934, and the total receipts from goods traffic were £119,955, against £120,006. On railways partly in Northern Ireland, passengers in the first eight months of 1935 numbered 4,177,317, against 3,688,489 for the corresponding period of 1934, and passenger receipts were £306,730, compared with £290,586. Goods and minerals carried in the first eight months of 1935 were 642,351 tons, compared with 622,298 tons in the first eight months of 1934, and total receipts from goods traffic amounted to £405,465 against £377,697.

PUBLICATIONS RECEIVED

The Story of Telford: The Rise of Civil Engineering. By Sir Alexander Gibb. London: Alexander Maclehose & Co., 58, Bloomsbury Street, W.C.1. 9 in. × 6 in. × 1½ in. 357 pp. 31 illustrations and 3 maps. Price 16s. net.—It is a matter for some surprise that so few biographical studies have been published of a man whose work had a profound effect on both the civil engineering and the transport progress of his day, and one, moreover, who has left so many notable constructions that survive to the present day. A "Life of Thomas Telford, Civil Engineer, written by himself," was published four years after his death under the editorship of his great friend, John Rickman, and there is, of course, the well-known volume by Samuel Smiles in the "Lives of the Engineers" series. The celebration in 1934 of the centenary of Telford's death obviously justified the production of a new volume, however, and it is pleasant to find that Sir Alexander Gibb has found time among his many activities to undertake its authorship. He is particularly well qualified for the task as he is descended from one of Telford's principal assistants and has had access to many original documents and plans which Telford prepared. Telford's private life, which has been comparatively neglected in former biographies, is more fully treated in this book. Use has been made of some hundreds of his letters and of a great many papers and reports, which have become available only recently, and throw much additional light on his many activities.

Telford's public work was not inaptly summarised in Southey's much-quoted punning description "Pontifex Maximus and Colossus of Roads" for he built a total of some 2,000 bridges, large and small, and was responsible for the planning, surveying and construction of between 3,000 and 4,000 miles of roads. In canals, harbours, roads, and bridges—from the Gota Canal to an early Panama Canal project, from the Holyhead mail route to a road-construction programme for Poland—Telford exerted a world-wide and outstanding influence on civil engineering in his time, and on the birth and growth of a great profession. Probably the bridge which comes most readily to mind is the famous one he built to carry the Holyhead road across the Menai Straits, as this was the pioneer of large suspension bridges. His eminence was such that he was naturally invited to become the first President of the Institution of Civil Engineers, an office he assumed on March 21, 1820.

In a prefatory note the author of the present volume modestly disclaims any attempt to do full justice to a long professional life of extraordinary activity and importance, but it is impossible to turn over the pages on which are listed the principal works with which Telford was connected without realising the multitudinous and widespread nature of his pursuits. Telford lived between 1757 and 1834 and so missed the railway construction era in the second quarter of last century. Certainly he surveyed a proposed Glasgow-Berwick railway in 1810 and was concerned in a consultative capacity with two or three other early schemes, but his work in this field was neither extensive nor influential. His great effect on transport development was his practical advocacy of providing roads with solidly laid foundations, and in this connection his indirect influence on early railway engineers must have been important. References to his work were made in our columns last year on the occasion of the centenary of his death, notably in our issues of February 9, June 15, and September 7. We feel it is an admirable finish to these celebrations that so eminent an engineer as Sir Alexander Gibb should have crowned their transient interest with the more permanent memorial of an admirable and well-annotated biographical volume.

The Year Book of the Bermudas, The Bahamas, British Guiana, British Honduras and the British West Indies, 1935. London: Thos. Skinner Limited, 330, Gresham House, Old Broad Street, E.C.2. Montreal: Castle Building, Corner of St. Catherine and Stanley Streets. 9½ in. × 8 in. × ¾ in. 344 pp. Illustrated. Price: 7s. 6d. Canada: $2.00, U.S.A. $2.50 net.—This is essentially a book of information, but like our own "Whitaker," it is a book over which it is easy to ponder. There are few illustrations to attract the attention and excite the imagination, but an affinity for Bermuda, for example, is rapidly acquired when it is noticed that life there is totally free from the burdens of income tax. Like the rest of the world, however, these scattered islands and territories of the Caribbean Sea have suffered from the set-backs of the recent slump, and the trade returns show shrunken figures. Nevertheless, prospects for the future seem bright, and an increasing source of revenue is the growing tourist traffic. The method of presentation of information is first a general section dealing with the British West Indies as a whole, followed by separate particulars of each colony. Taking Jamaica as an example, the enquirer will find first a general geographical and historical survey. Then under various headings are set out the constitution and administration, financial and trade particulars, details of educational facilities and other social services, methods of communication and transport, a professional and trade directory, and, finally, the prevailing customs tariff. The transport particulars are quite comprehensive. Not only are particulars given of the services provided, but in addition the principal officers are listed, and brief financial results recorded.

Welding Rods.—An illustrated folder published by the Suffolk Iron Foundry (1920) Limited, Stowmarket, gives some useful notes on welding with Sifbronze rods and an oxy-acetylene flame. The versatility of Sifbronze makes it possible to join high melting point metals, such as cast iron, steel, nickel, and copper, to much lower temperature melting alloys. Examples of repairs by Sifbronze welding to gearwheels, foundry appliances and presses are among those illustrated and described.

Winter Sunshine Holidays.—A very readable style has been adopted for the text of this illustrated guide (issued free) to Southern Railway winter resorts, and the chapter on Eastbourne—in the form of a conversation with one of the colonels for which the resort is famous—is an amusing variation of the form in which holiday information is normally conveyed. As well as a fine selection of views, a few pages are devoted to giving a pictorial impression of the variety of entertainments available at some of the places described. Only one thing mars the pleasurable anticipations of the prospective traveller, and that is a reference in the advertisement index to "Sunday Pullman cheaps to seaside." A more sonorous description might with advantage be found for these excellent reduced-fare facilities.

Operators' Handbook.—We have received from H. W. Ward & Co. Ltd., Birmingham, manufacturers of machine tools, a copy of the second edition of the firm's "Operators' Hand-Book." The information contained therein has been compiled to assist the actual lathe operator to secure adequate service from his machine, and from our perusal of its pages we should say that it fully meets every requirement in this direction. The text matter covers a wide range, starting with the installation of the machine tool and dealing in sequence with the numerous components and tools and the methods of handling them in order to get the best results. It is a comprehensive survey running into 64 pages, measuring approximately 11 in. by 8½ in. We have nothing but praise for the clearness of the type and the lucidity of the drawings with which the text is accompanied. Every one concerned with the operation of lathes, whether they are managers, foremen or workmen, should find this publication of great practical value. Written by experts and sponsored by one of the best-known firms of lathe manufacturers, it can be confidently recommended to every one concerned with the subject with which it deals. We are asked to state that copies of the publication are obtainable from H. W. Ward & Co. Ltd. at 2s. a copy, post free. There is, as we know, a tendency sometimes to be reluctant to pay for what is regarded as a "trade publication." If that be so, we can assure anyone who feels a desire to obtain a copy of the work that it is worth every penny of the very moderate charge named.

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THE SCRAP HEAP

According to a publication of a northern university, there is a Kansas State bye-law which decrees that: "Where two trains approach a siding in different directions, along a single track, both shall stop and neither proceed until the other has passed."

* * *

CRICKETS AT GRAND CENTRAL STATION, NEW YORK

Above the usual noises of one of the world's greatest passenger terminals, the cheery chirruping of crickets could be heard recently. It happened at Grand Central station in New York and undoubtedly represents the first time in a century or more that crickets could be heard near 42nd street. The occasion was the opening of an exhibit by the New York state conservation department at Grand Central, which included real pine trees, a log cabin, a canoe, and other backwoods objects, in addition to the aforementioned crickets.—*From the "Railway Age."*

* * *

PARING OFF THE WEIGHT AND BULK

Drawn by *Silver Link* engine, which weighs 15 tons and has no visible funnel or boiler, new L.N.E.R. streamlined express Silver Jubilee set up British train speed record of 112 m.p.h. —*From "Pennyfare," the staff journal of London Transport.*

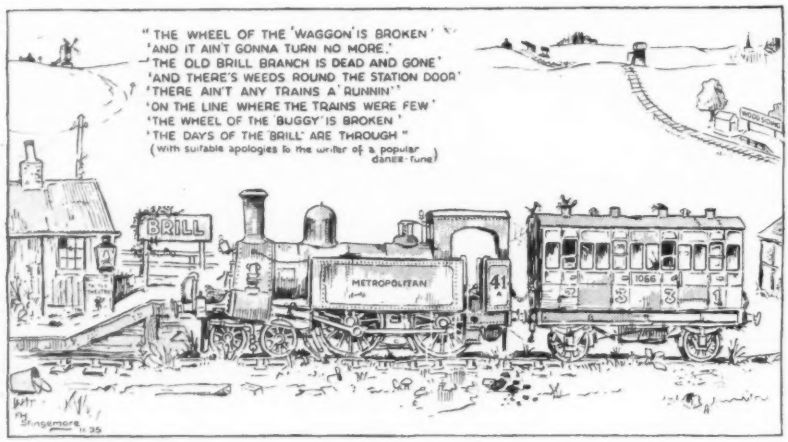
* * *

The Boston & Maine Railroad recently came into possession of a timetable of one of its predecessors, issued in 1850, showing the operation of a Sunday train, with this important requirement: "Persons purchasing tickets will be required to sign a pledge that they will use the tickets for no other purpose than attending church."

The aged past-C.M.E. had wearied his fellow club members for long with his incessant chatter about loco. boilers and cylinders, and the sighs of regret at his decease were quite definitely mingled with other sighs (of relief), for now there would, would there not? be a cessation of the old man's importunities.

"How, exactly, did he come by his end?" asked one member of another.

"The old bore had a stroke I believe," was the reply, "result of high pressure, y'know."


"THE WHEEL OF THE 'WAGGON IS BROKEN'
'AND IT AIN'T GONNA TURN NO MORE.'
'THE OLD BRILL BRANCH IS DEAD AND GONE'
'AND THERE'S WEEDS ROUND THE STATION DOOR'
'THERE AIN'T ANY TRAINS A'RUNNIN''
'ON THE LINE WHERE THE TRAINS WERE FEW'
'THE WHEEL OF THE BUGGY IS BROKEN'
'THE DAYS OF THE BRILL ARE THROUGH"
(with suitable apologies to the writer of a popular dance tune)
BRILL
METROPOLITAN
41
1066

A sketch by Mr. F. H. Stingemore published in "Pennyfare" in connection with the closing of the Brill line, to which we refer in a news article on page 982

Asked his opinion of the Polish railways, the returned traveller remarked that they were "not too bad on the whole," although, he thought, the staff, or certain members of it, "could perhaps do with a little more polish."

* * *

THE ORIGIN OF PICKFORDS

"Colonel Szlumper referred to the history of our firm. He will no doubt be interested to hear that Mr. Shirley James, our historian, while looking through an old safe in the basement, found some papers that showed that the name of Pickfords originated somewhere about 1066. The information was as follows: there were a number of English families who resisted the Normans but were afterwards compelled to join them and work for them. Amongst these was one, John O'Ford, a landowner, clever at fording rivers. He was employed by William in connection with the compilation of the Domesday Book which was completed in 1086, and in recognition of his service he was given the name of Pickford.

"As this astounding information was given to me by our historian after lunch, I was rather suspicious, so asked to see the actual documents. These were produced, and Mr. James is now spending all his spare time in the basement searching feverishly for data to prove definitely that this was the origin of the firm of which we as members of the staff are so proud."—*Mr. W. J. Elliott, General Manager of Pickfords Limited, in a speech at the firm's annual staff dinner.*

* * *

Early Railway Goods Transport

(*See editorial article on page* 956)

GOODS BY RAILWAY.

CHAPLIN AND HORNE Forward Goods by the various Railways as under, (on their own account or as Agents of the Companies,) viz.:—

NORTHERN LINES,

To Liverpool, Manchester, Chester, Warrington, Hertford, Crewe, Macclesfield, Sandbach, Congleton, Leek, Whitmore, Stafford, Staffordshire Potteries, Wolverhampton, Birmingham, Coventry, Leamington, Warwick, Burton, Tamworth, Leicester, Derby, Nottingham, Sheffield, Wakefield, Leeds, Hull, York, Huddersfield, Halifax, Bradford Darlington, and Newcastle.

BY SOUTH WESTERN RAILWAY,

To Basingstoke, Andover, Salisbury, Winchester, Romsey, Gosport, Portsmouth, Southampton, Poole, Christchurch, Wimborne, Ringwood, Lymington, Blandford, Dorchester, Weymouth, Havre de Grace, Guernsey, Jersey, St. Malo, Isle of Wight, Plymouth, Torquay, and Dartmouth.

BY GREAT WESTERN RAILWAY,

To Bath, Bristol, Cheltenham, Gloucester, Witney, Abingdon, Oxford, &c. &c.—and

BY LONDON AND BRIGHTON RAILWAY,

To Brighton, Shoreham, Horsham, Worthing, Cuckfield, Uckfield, Lewes, Reigate, and Dorking,—and

BY DOVER "SOUTH EASTERN" RAILWAY,

To Dover, Folkestone, Hythe, Ashford, Canterbury, Rye, Hastings, Tonbridge, and Tonbridge Wells.

And most of the intermediate and adjacent places,

FROM HAMBRO' WHARF, THAMES STREET; Railway Station, Camden Town, and their Offices, City and the West.

London: Printed at 137 and 138, Aldersgate-street, in the Parish of St. Botolph, Without Aldersgate, in the City of London, by JOHN THOMAS NORRIS, Printer, residing at 23, Myddleton-square in the Parish of St. James, Clerkenwell, in the county of Middlesex, and published by him at the *Railway Times* office, No. 122, Fleet-street, in the Parish of Saint Bride, in the City of London.—Saturday, April 19, 1845.

"The Railway Times" of April 19, 1845

SOUTH-EASTERN AND DOVOR RAILWAY.—The Directors of this Company having determined to become Carriers on their line of Railway, affording every possible accommodation to the Public, with a greater regularity of charge, Messrs. CHAPLIN and HORNE have undertaken the Agency in London, in connection with the parties as stated below, with whom they are confident the Public may ensure the strictest regularity and despatch on all Goods and Merchandise entrusted to their care.

RECEIVING OFFICES.

HAMBRO' WHARF, Thames Street.
SWAN-TWO-NECKS, Lad Lane.
Cross Keys, Wood Street.
Spread Eagle, Gracechurch Street.
Spread Eagle, Regent Street.
Golden Cross, Charing Cross.
Griffin's Green Man and Still, Oxford Street.
George and Blue Boar, Holborn.

"The Railway Times" of April 12, 1845

PICKFORD AND CO. beg to inform their Friends and the Public that in consequence of alterations in the Charges of the London and Birmingham Railway Company, their rates for goods passing over that line will be reduced on and after the first of July next.

Further particulars will be made known as soon as possible, or may be obtained by application at their various Offices.

LONDON RECEIVING HOUSES.

Castle, Wood-street, Cheapside.
Wharfs 1 and 2, City Basin, City-road.
395, Oxford-street.
158, Regent-street.
Railway Stations, Camden-town, London Bridge, and Bricklayers' Arms.
Castle-street, Wood-street, June 19, 1845.

"The Railway Times" of June 21, 1845

XUM

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

SOUTH AFRICA

Summer Accelerations

Several important train service accelerations will be brought into operation with the introduction of the Summer train service on December 2. The Union Express from Capetown to Johannesburg will be accelerated by 60 min., the Union Limited to Capetown by 63 min. and the time of the fast train service on Saturdays to Johannesburg will be curtailed by 60 min. Other trains between Capetown and Johannesburg will be accelerated by from 56 min. to 50 min. The journeys from Bulawayo to Port Elizabeth and from Bulawayo to East London will be reduced by over 16 hr. each by the train which leaves Bulawayo on Mondays. Further accelerations are as follow:—

	Trains a week	Acceleration Hr.	Min.
Johannesburg–Port Alfred ...	3	2	40
Johannesburg–Port Elizabeth	1	–	30
Johannesburg–Port Elizabeth	6	2	20
Johannesburg–East London	6	4	35
Johannesburg–East London	1	–	31
East London–Johannesburg	1	–	29
Capetown–Durban	5	2	37
Durban–Capetown	3	3	0
Capetown–Bulawayo ...	1	–	30
Capetown–Bulawayo ...	2	–	20
Bulawayo–Capetown ...	1	–	28
Bulawayo–Capetown ...	1	11	46
Bulawayo–Johannesburg ...	1	5	15
Bulawayo–Johannesburg ...	1	1	25

Other services which have been accelerated in recent months were referred to in THE RAILWAY GAZETTE of April 12 and July 5.

Overseas Wagon Orders

In connection with the placing of orders overseas for new steel wagons, the administration has issued a statement to the press in refutation of certain published allegations that a recent order placed by the administration with certain German manufacturers was arranged by direct negotiation between a German group and the South African Railways, and that the delivery itself must necessarily form part of a great barter deal between the Union and the German Reich. So far as the Railway Administration is concerned, these statements are entirely incorrect and without foundation. The order in question is one for 500 wagons [see page 846 in our issue of November 15—ED. *R.G.*], out of orders to the total of 2,000, the tenders for which were all dealt with by the Railway Tender Board, the facts being as follow:—

In July last, to meet heavily increased traffic, tenders were called for 450 drop-sided steel bogie wagons and 500 four-wheel steel wagons; these tenders were returnable on September 23 and 30 respectively. In the meantime, traffic increased so rapidly that in August it was decided to duplicate the above quantities and to call for quotations by cable for a further 500 bogie and 500 four-wheel wagons of the same types: quotations were returnable on September 9, 1935. The quotations obtained by cable were considered by the Railway Tender Board at a meeting held on September 11, as a result of which an order for 450 bogie and 500 four-wheel steel wagons, total 950, was placed with Vickers & Metropolitan Carriage (S.A.) Ltd., Johannesburg, for manufacture in Britain [as recorded on our Contracts and Tenders page, September 20. —ED. *R.G.*].

The tenders received for the 450 bogie and 500 four-wheel wagons originally invited were considered by the Railway Tender Board at a meeting held on October 10 last, as a result of which an order for 450 bogie wagons (increased to 500) was placed with Reid Bros., South Africa, Limited, Johannesburg, on behalf of a Belgian firm (lowest tender) for manufacture in Belgium. This firm afterwards, with the administration's consent, sub-let half the order to another Belgian firm. [This order was recorded in our November 15 issue.—ED. *R.G.*]

The order for 500 four-wheel steel wagons was placed with the Association of German Wagon Builders for manufacture in Germany, and was distributed among six German firms [as also shown in our November 15 issue.—ED. *R.G.*] This latter tender was the lowest, and was received through Orenstein & Koppel (S.A.) Ltd., Johannesburg. No negotiations of any description have been conducted with any of the manufacturers, all business having been done through the medium of the Railway Tender Board.

INDIA

Proposed Sind Right Bank Feeder Railways

Since the completion of the Sukkur Barrage the question of providing adequate communications in the vast areas opened up to cultivation and habitation has received the serious consideration of the local and central Governments. In 1934 a special officer was deputed to inquire into the road and railway requirements in the area on the right bank of the River Indus. This officer, Mr. Stubbs, instituted several traffic surveys for railway lines along certain alignments. As a result of these investigations, the only alignment that he recommended was the Larkana-Silra Shahdadkot by conversion of the existing narrow gauge line to broad gauge and an extension thence to Jacobabad via Ghorli Khairo, Ushda and Moulabad. The Agent of the North Western Railway recently consulted the Karachi Advisory Committee of the railway on this project, a special advantage of which lies in the alternative route it provides to the Ruk-Jacobabad section, which is liable to serious damage by floods. The alignment was approved by the committee.

A resolution has been adopted in the Bihar Legislative Council requesting the local Government to urge upon the Railway Board and the Bengal and North Western Railway the necessity for the early construction of the Chikiatrans-Gandal-Sidhwalia chord railway. This line will serve a rich paddy and sugar-cane area in which several sugar mills are located. The scheme, which is estimated to cost Rs. 46½ lakhs, involves the construction of a bridge over the River Gandak.

Sind-Bombay Connection Opposed

The report on the administration of the Port of Bombay for the year 1934-35 says that during the year the Agent of the B.B. & C.I. Railway invited the views of the Bombay Port Trustees on the proposed railway connection between Sind and Bombay. The trustees expressed the opinion that the construction of the railway was neither necessary nor desirable. The existing coastal service which the proposed railway would replace was both economic and efficient. The line would traverse barren and unpopulated districts and was not likely to earn an adequate return on capital outlay, a return which, in the opinion of experts, would hardly exceed 2 per cent.

UNITED STATES

Lower Passenger Fares

The Western railroads have announced that the reduced basic passenger fares made experimentally two years ago will now be made permanent. These rates are 1½d. a mile for tickets available in Pullman cars and 1d. for coach tickets, except for transcontinental travel, namely, between the Mid-West and the Pacific Coast, where tourist Pullman sleeping cars may be used at a fare of 1d. and coaches at ¾d. a mile. These rates compare with the basic fare of 1·8d. a mile in force from 1920 to 1933, during which time the American railways lost nearly 75 per cent. of their passenger receipts.

The 1920 rate of 1·8d. is still adhered to by the Eastern railways, and a proposal to require its reduction is still being discussed by the Interstate Commerce Commission, and the principal passenger carriers among the Eastern railways—the New York Central, the Pennsylvania, and the New York, New Haven & Hartford—who are strenuously opposed to reduction.

In announcing that new low rates have been made permanent, the Western railroads pointed out that their passenger receipts in the first

XUM

eight months of the current year had registered an increase of £1,200,000 over the first two-thirds of 1934. In the same period the Eastern railroads suffered a decline in their passenger receipts of £205,000.

The basic fares are not by any means the lowest available, either in the East or the West. The Western railroads, for example, offer substantial reductions for return journeys, but these reductions have not as yet been made permanent; the railways are still experimenting with them.

Mr. Eastman Threatens

Mr. Joseph B. Eastman, Federal Co-ordinator of Transportation, addressed a meeting of the "member roads" of the Association of American Railroads, and urged them to action in unifying their terminals. Studies undertaken by his staff indicate the certainty of large savings to be obtained in this manner. But the railways have not acted because of the statutory prohibition against depriving employees of their jobs by such joint action of the companies. Mr. Eastman suggested that, with traffic increasing, employment might be found for such workers elsewhere on the railways, or that amicable arrangement might be made with the unions whereby the employees dismissed would be compensated; or, as still a third alternative, he suggested that the railways might test the constitutionality of this prohibition in the courts.

The Federal Co-ordinator also recently addressed a gathering of the Brotherhood of Railroad Clerks and was as frankly critical as he is when dealing with railway managements. No other public servant in America, probably, has similar courage to tell voters in the mass what they do not like to hear. Among other things, he said:

"You would like to see a great increase in the number of rail-road jobs. So would I. But this means an increase in railroad traffic. There will be an increase as general business conditions improve. But under present conditions the railroads will not go forward beyond that point, unless they are able to furnish the best possible service at the lowest possible costs consistent with safety, adequate wages and good working conditions.

"That is why I have advocated consolidation and unification economies. I know that some men will be thrown out of work in the immediate future because of these economies, and I have tried to protect them by a liberal plan of dismissal compensation. But, and this is what I want you to think about, I am also confident that there will be more railroad jobs in the long run if you accept these economies now. If you do not, if you insist that two men must do work that could be safely and efficiently performed by one, you are helping to close the door against future increase in employment opportunities."

BRAZIL

Rear Collision on the Central Railway

Due to an engine failure on one of the preceding trains out of Rio during the evening rush hour on October 16, the 5.52 from Rio to Deodoro was held up by signals at São Francisco Xavier —a suburban station 3 km. to 4 km. out from Rio—and was run into behind by the 5.58 to Paracamby. The three rear vehicles of the 5.52 were telescoped but, although 8 passengers were killed and 120 injured, the casualties would have been much heavier but for timely warning from the signalman in rear, who advised his colleague at São Francisco Xavier that the 5.58 had run past his signals at danger, thus enabling warning to be given to the passengers to jump for it. As usual the 5.52 was seriously overcrowded and so only a percentage could escape in time. No inquiry has yet been held into the cause of the collision. The driver and fireman have long service and good records, and they passed the signals in daylight, whatever their indication.

FRANCE

Streamlined Locomotives

The P.L.M. Railway now has in service on the Paris-Lyon line a second streamlined Atlantic locomotive and four-car train. Other recent streamlined rebuilds in France include the Est Mountain No. 241.03 and the Etat Pacific No. 231.761. The streamlined contours of all types differ.

New Electrified Line

The section of line between Montauban and Narbonne, belonging to the P.O.-Midi Railway, is now operated by electric traction on the 1,500-volt system. Conversion work is being pushed ahead on the Brive-Montauban division, and when this is completed, trains will be hauled electrically right through from Paris (Quai d'Orsay) to Narbonne, a distance of 538 miles.

State Railways New Bugatti Service

The fast service at 13.10 ex-St. Lazare arriving at Caen at 15.40 is now being worked by an 800-b.h.p. Bugatti railcar with a special trailer. This train, and the return service leaving Caen at 17.30 and arriving in Paris at 20.00, were previously worked by the twin-articulated 500 b.h.p. Renault diesel set, which is now working from the Le Mans depot.

Stainless Steel Electric Trains

The State Railways administration has recently ordered 20 two-car electric trains built of stainless steel on the Budd shotwelded process for a fast suburban service on the Paris (Montparnasse)-Rambouillet section of the Paris-Le Mans main line, which is in course of conversion on the French standard 1,500-volt d.c. system. The cars are to be built by the Carel-Fouché Company at a cost of approximately 925,000 fr. each; they will be air-conditioned and will seat 220 passengers.

U.S.S.R.

General Railway Development

Further Reuters messages point out that the process of intensive improvement of the Soviet railways is already taking marked effect. Car loadings have risen by 30 per cent. since the end of last year and the total mileage now exceeds 52,000. The first and second five-year plans have already been responsible for 15,000 miles of new line. Meanwhile long lengths of doubling and relaying have been and are being carried out and several thousand kilometres of line have been equipped with the automatic block signalling, a feature that did not exist on the Soviet railways in 1930.

CHINA

Hankow-Wuchang Train Ferry

The Ministry of Railways has issued definite instructions to the Peiping-Hankow and Hankow-Changshan (section of the Canton-Hankow Railway) administrations to prepare specifications and estimates for a railway ferry across the Yangtze between Hankow and Wuchang to complete the through rail communication between Peiping and Canton.

Peiping-Tientsin Services Acceleration

The Peiping-Liaoning (Mukden) Railway announces that, with effect from January 1 next, the Peiping-Tientsin service will be speeded up to 2 hr. 10 min. instead of the present 2 hr. 50 min. [The distance between these two cities appears from the large-scale map to be about 90 miles.—ED. *R.G.*]

The total Tientsin-Pukow Railway debt now stands at over $110,000,000.

JAPAN

Landslide Causes Fatal Railway Accident

The heaviest rainfall ever recorded caused serious traffic interruptions in the north of Japan on October 27. A fatal train accident occurred at 5.54 p.m. that day near Kawamaye station on the Banyetsu-Higashi line, a new branch opened in 1934. A down train from Koriyama ran into a landslide, though an up train had passed the spot without having noticed any irregularity a short time before. The train concerned in the accident was a mixed train composed of engine, four coaches and three vans. The engine and three coaches fell into a ravine, 100 ft. below, and nine passengers were killed, nine passengers and three railway servants were seriously injured, and 35 passengers suffered less serious injuries.

XUM

NEW 4-14-4 TYPE LOCOMOTIVE FOR THE U.S.S.R. RAILWAYS

This noteworthy engine, which was recently completed at the Lugansk locomotive works, has features of outstanding interest

ON page 763 of our issue of November 8 we commented briefly upon the 4-14-4 type locomotive recently built at the Lugansk locomotive works for service on the railways of Soviet Russia, and now, by the courtesy of the editors of our American contemporary, the *Railway Mechanical Engineer*, we are able to reproduce a drawing showing the general appearance and overall proportions of this very large and powerful machine. The design was based on certain well defined factors, the observance of which raised some difficult problems. To begin with, the locomotive must be able to operate on the existing light track, where the rails weigh only 76 lb. a yard, while curves of 525 ft. radius must be negotiated at full speed, and even sharper curves at reduced speeds. The engine was required to run at speeds of 43 m.p.h. and must be capable of maintaining a speed of 15 m.p.h. with trains of 2,750 short tons on specified heavy grades. The wear of track on curves, and side thrusts, were to be as low as possible, axle loads were limited to 20 metric tons, and the tractive force must be at least 60,000 lb. at speed.

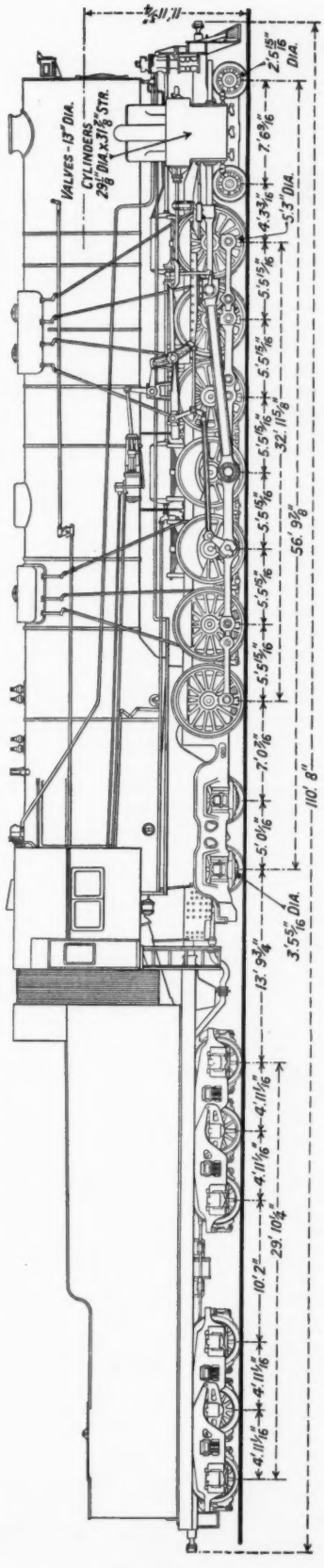
To meet these and other equally difficult requirements, it was finally decided to adopt the 4-14-4 wheel arrangement, the engine being of the two-cylinder type with outside cylinders 29½ in. diameter by 31⅞ in. stroke, driving the fourth pair of coupled wheels. Steam distribution is effected by means of 13-in. diameter piston valves actuated by a specially designed form of Walschaerts gearing. The coupled wheels have a diameter of 5 ft. 3 in. and the boiler pressure is 242 lb. per sq. in. At 85 per cent. of this pressure the tractive force exerted is 88,250 lb. The engine and tender in working order weigh 328 tons. The tender, which is mounted upon two six-wheeled bogies, carries 11,620 U.S. gallons of water and 24 tons of coal. The total heating surface, evaporative and superheating, is 6,695·6 sq. ft., and the grate area 129·2 sq. ft.

Very naturally in a design of this sort, the boiler is conspicuous not only by its size, but by its design. It is of the parallel type, and placed with its centre line 11 ft. 11¾ in. above the rails. The firebox is 15 ft. 9 in. long and 8 ft. 2 7/16 in. wide. The grates are of the shaking type, and a grate shaker operated by either steam or compressed air is provided. A mechanical stoker and hopper ashpan are used. The combustion chamber is 8 ft. 2 7/16 in. long, thus increasing the firebox volume to 865·2 cu. ft. The brick arch is carried on four arch types each of 3½ in. diameter. There are 138 ordinary fire tubes, of 2¾ in. outside diameter, and 48 superheater flues 6¾ in. in diameter; tubes and flues are 22 ft. 11 5/16 in. long. The superheating apparatus is of the Chussov six-tube type, in which the tubes have an outside diameter of 1 5/16 in. The evaporative heating surface of the boiler is 4,822·7 sq. ft., to which total the firebox contributes 594·4 sq. ft. The superheating surface is 1,872·9 sq. ft., the combined total being, as already stated, 6,695·6 sq. ft. The evaporative capacity of the boiler is estimated to be 73,716 lb. per hr., which corresponds to a potential or boiler horsepower of 3,880. Assuming a combustion rate of 82 lb. per sq. ft. of grate per hr., the total amount of coal burned would be 10,594 lb. per hr., so that if one horsepower could be developed for each 2·65 lb. of coal, the total horsepower would be 4,000.

Welding has been extensively used in the construction of the boiler, mainly to reduce weight, but partly to allow the use of boiler plates of readily available sizes. The boiler is fed by two exhaust steam injectors, having a capacity of 95 to 100 U.S. gallons a minute, and two live-steam injectors having a capacity of 45 to 48 U.S. gallons a minute are also provided.

In order to facilitate the movement of the engine on curves, the third, fourth, and fifth pairs of driving wheels have flangeless tyres, 6⅞ in. wide. The reciprocating weights are reduced, and piston rods of abnormal diameter rendered unnecessary, by a secondary supporting crosshead located midway between the cylinder and the main crosshead. All the rods are fitted with floating bushings and arranged for grease lubrication. The axles and crank pins are hollow bored.

The piston valves have a maximum travel of 7 1/16 in.. and power reversing gear is fitted. Fourteen pneumatic sanders distribute sand from the two large sand boxes mounted on the boiler to the front of all the coupled wheels. A regulator with six valves and one pilot valve is installed, and there is a stop valve in the dome.



RAILWAY OPERATING EFFICIENCY

A six years' analysis of the principal railway operating statistics

(*By a railway correspondent*)

RAILWAY operating officers are constantly seeking ways and means of securing increased efficiency, and statistical data are available in their own particular spheres to enable them to determine whether or not their efforts are successful. Information is also available to the administrative departments, in respect of the various fields of railway operation, which makes it possible for the results to be measured. But it is not so easy to obtain a complete picture of the operating performance as a whole, and some form of comprehensive statistical index combining the various factors would be of great assistance in this connection if such an index were available.

To produce a statistically accurate result, all the factors in a comprehensive index would need to be, or to be made, of equal value, and the principal difficulty is that of attributing appropriate "values" to the different elements which have to be included. For example, to what extent does increased speed counteract reduced load, or *vice versa*? In differing circumstances, opposite results might really conduce to greater operating efficiency. Or, to what extent does the more intensive use of engines offset longer intervals out of service for repairs, or the reverse? Again, to what degree should reduced coal consumption per mile by locomotives be discounted if achieved at the expense of reduced train loads, or speeds—and so on? It would appear that no system of "weighting" would be likely to secure accurate results, and that for the purpose of this review a simple index, uncomplicated by artificial adjustments to its component units, affords the most fruitful and interesting possibilities. The accompanying tables have therefore been prepared on this basis.

The statistical data used in compiling the tables have been extracted from the Annual Railway Returns of the Ministry of Transport, and the figures now given bring up to date similar summaries published in former issues of THE RAILWAY GAZETTE.* Separate tables are given for each of the four group companies, and for the standard gauge railways of great Britain as a whole. As will be seen, ten statistical units representative of the passenger and freight train operations have been selected, for each of which the yearly averages are given, together with their percentage relation to those of a basis period (100). The basis period chosen covers the three years 1923-1925, an interval of comparatively stable trade conditions, which immediately followed the formation of the enlarged railway systems under the Railways Act, 1921. The information reproduced herewith is in respect of the last six years, 1929 (the last normal year) to 1934, inclusive. The comprehensive index is obtained by taking the average of the ten percentages in respect of each year.

Whilst, for the reasons stated, the final yearly indices can be used only as indicating general operating tendencies, a detailed review of the component factors may be undertaken with confidence, because they are individually strictly comparable year by year. It will be realised that the figures do not afford a basis of comparison between one company and another, as differing physical features, operating conditions, and traffic requirements, render such comparisons difficult unless the individual circumstances are known. The utility of the tables lies in the fact that they provide, by means of the ten separate indices, a reliable means of ascertaining the rate of improvement, or retrogression, in the operating standards of the railways in relation to their own previous performance.

A few brief observations may be given upon the general table, as indicative of the conclusions which the results suggest, and, in particular, their influence upon operating costs.

The first two items in the table should be considered together, and the close relationship between the volume of freight traffic dealt with and the wagon and train loading will need no emphasis. Both items show how sensitive the loading has proved to the effects of the trade depression of recent years. In 1929, the last year of normal freight carryings, the average wagon load showed

Unit	Three years' average, 1923-4-5	1929	1930	1931	1932	1933	1934
(1) Average wagon-load	*5·59*	*5·65*	*5·59*	*5·50*	*5·42*	*5·37*	*5·46*
	100·0	101·07	100·0	98·39	96·96	96·06	97·67
(2) Average train-load ..	*131·74*	*130·92*	*127·71*	*124·73*	*121·06*	*122·21*	*125·27*
	100·0	99·38	96·94	94·68	91·85	92·77	95·09
(3) Wagon-miles per engine-hour	*118·22*	*117·70*	*120·49*	*123·02*	*124·29*	*125·82*	*126·07*
	100·0	99·56	101·92	104·06	105·13	106·43	106·64
(4) Train-miles per train-hour, freight ..	*8·31*	*8·43*	*8·83*	*9·11*	*9·58*	*9·49*	*9·32*
	100·0	101·44	106·26	109·63	115·28	114·20	112·15
(5) Net ton-miles per engine-hour ..	*443·60*	*446·72*	*450·74*	*449·71*	*447·98*	*451·37*	*459·92*
	100·0	100·70	101·61	101·38	100·99	101·75	103·68
(6) Train-miles per train-hour, coaching ..	*13·86*	*14·47*	*14·59*	*14·72*	*14·84*	*14·85*	*14·92*
	100·0	104·40	105·27	106·20	107·07	107·14	107·65
(7) Locomotive stock, percentage of number available to stock	*75·90*	*80·27*	*80·02*	†*81·17*	†*81·29*	†*79·95*	†*79·95*
	100·0	105·76	105·43	106·94	107·10	105·34	105·34
(8) Engine-miles per day per engine in use	*100·83*	*100·02*	*99·90*	*101·73*	*102·99*	*106·35*	*108·12*
	100·0	99·20	99·08	100·90	102·14	105·47	107·23
(9) Coal consumption, coaching (miles per lb.*)	*·020300*	*·020309*	*·020597*	*·020636*	*·020725*	*·020682*	*·020657*
	100·0	100·04	101·46	101·65	102·09	101·88	101·76
(10) Coal consumption, freight (miles per lb.*)	*·015446*	*·015694*	*·015883*	*·015833*	*·016124*	*·016124*	*·016124*
	100·0	101·60	102·83	102·50	104·39	104·39	104·39
Total	100·0	101·31	102·08	102·63	103·30	103·54	104·16

* Converted from "lb. per mile" to secure relative percentage variation.
† Includes engines in serviceable condition stored and temporarily withdrawn from service.

Great Britain (all standard-gauge railways)

* The previous article in this series appeared in THE RAILWAY GAZETTE of August 25, 1933.

a slight increase (1·07 per cent.) compared with that of the basis years, but, with the declining tonnage of subsequent years, it fell steadily to 1933, recovering by 1·61 points in 1934 in response to the greater volume dealt with. Last year's average loading was, however, still 2·33 per cent. below that of ten years ago. The train loading was even more seriously affected by the " slump " in trade. Item No. 2 shows that the " average train load," which in the year 1929 was only slightly below that of the basis years, fell steeply until in 1932 it was 8·15 per cent. below the basis years. A slight recovery in 1933 was followed by a firmer upward movement last year, when the index figure recovered to 95·09. All these movements followed the variations in tonnage, which dropped from 351 millions in 1929 to 269 millions in 1933, improving to 289 millions last year, a volume 17½ per cent. below that of 1929.

In the face of this reduced tonnage, and the changed conditions of trade in recent years, involving the conveyance of smaller and more frequent consignments of general merchandise, with quicker transits, the adverse results which these two indices show may be discounted to a large extent. Ingenious statisticians may even be able to ascribe the requisite degree of " weight " which should be applied to them! The importance of the load factor in operating economics cannot, however, be over emphasised when its effect upon working costs is considered. For instance, if the average wagon load of the basis period, viz., 5·59 tons, had been secured last year, in place of the realised average of 5·46 tons, the freight traffic of the railways could have been lifted with 1¼ million fewer loaded wagon journeys than were actually made. In respect of the train loading, the running of approximately 110,000 freight trains would have been unnecessary had the railways been able to maintain last year the average train load of 131·74 tons secured in the basis years, to which must be added the marshalling, shunting, empty haulage, &c., incidental to the running of these additional trains.

Saving in Engine-miles

On the other hand, Item No. 3 shows that the effective work, in the form of wagon-miles run during each engine-hour employed, was increased to the highest level yet reached, viz., 6·64 per cent. above the average of the basis years. This higher standard enabled the total wagon-miles operated last year to be run with reduced expenditure of locomotive power to the extent of approximately 65,000 engine hours compared with 1933, and over 2¼ million less engine-hours than if the lower average of the basis years had operated.

Item No. 5, viz., net ton-miles per engine-hour, represents the revenue load hauled in relation to the locomotive power used. In this unit, also, a high record was established last year, with an increase of 1·93 per cent. in the index compared with 1933, and 3·68 per cent. compared with the datum years.

The speed of freight train movement is indicated by Item No. 4, freight train-miles per train engine-hour. The influence of the increased volume of traffic last year, and its reaction upon the train loading, is shown in the slight reduction in comparison with the year 1933, but the marked improvement in recent years compared with that of the basis years gives an indication of the extent to which the freight train services of the country have been accelerated during the period under notice, the index figure of last year being 12·15 per cent. higher than that of the basis years. This index also demonstrates another important feature, viz., the economy in train-hours which follows the more rapid movement of trains, for a simple computation shows that the number of train-hours necessary last year to work the traffic was 1,697,000 less than would have been needed had the lower average rate of movement of the basis period still operated.

Continuous Advance in Speed

The index figures in Item No. 6—coaching train-miles per train-hour—show that there has been a steady advance in the speed of passenger trains right throughout the period, and it now stands higher than ever before, with an increase of 7·65 per cent. over the basis period, thus confounding railway critics who profess to find no improvement in our general train speeds. It will be appreciated, of course, that this average is calculated over the whole of the time the engines are associated with their trains, and includes all running, standing, shunting and other time: also that all descriptions of passenger, parcel, and other coaching trains are included. The higher average speed of last year represented an economy of 94,000 passenger train-hours compared with the previous year, and 1,376,000 train hours compared with the basis period.

The ready availability of locomotives for traffic purposes is another factor which contributes materially to operating efficiency, and Item No. 7 gives the average number available throughout the year in relation to the total stock of engines. In this case, an adjustment has been made in the averages for the last four years to include engines in serviceable condition which have been temporarily withdrawn from traffic and stored; without such an adjustment the averages would be unduly depressed in comparison with the previous years. The index figure for the year 1934 was the same as that of the previous year, which, although somewhat lower than the preceding years back to 1929, was 5·34 per cent. above the basis years. The result needs to be considered in relation to the large reduction in expenditure on the maintenance and renewal of engines which has been effected in recent years, amounting to over £2,000,000, or 16½ per cent., compared with the year 1929. Also, it is to some extent counteracted by the next item in the table, engine-miles per day per engine in use, which shows that more intensive work is being secured from each unit of engine power employed. The index has steadily advanced throughout the period under review to the highest point yet attained, viz., 7·23 per cent. above that of ten years ago. The importance of these two items will be appreciated when it is remembered that the railway companies' expenditure on locomotive power last year amounted to approximately 30 millions sterling in respect of locomotive running, and a further 10 millions for the repair and renewal of engines.

The two remaining items in the index, which deal with the consumption of coal by passenger and freight train engines, are also important contributors to operating efficiency, and are particularly interesting as they may be related more closely than the other factors in the table to a definite item of expenditure, viz., the fuel consumed in locomotive running, which last year cost the British railways £10,341,047. In the case of the coaching services (Item No. 9), reduced consumption enabled the index figure to be improved gradually up to the year 1932, when it was 2·09 per cent. above that of the basis years, but there has been a slight retrograde movement in each succeeding year to a level 1·76 per cent. above that of ten years ago. On the other hand, the index in respect of the freight train engines (Item No. 10) was maintained during the last three years at the improved level attained in 1932, viz., 4·39 per cent. above that of the basis period. It is computed that, in comparison with the standard of ten years ago upon which the index is based, these variations in average coal consumption involved the use last

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Unit	Great Western Railway							London Midland & Scottish Railway						
	Three years' average, 1923-4-5	1929	1930	1931	1932	1933	1934	Three years' average, 1923-4-5	1929	1930	1931	1932	1933	1934
(1) Average wagon-load	*5·83*	*5·90*	*5·77*	*5·62*	*5·59*	*5·56*	*5·63*	*5·43*	*5·38*	*5·35*	*5·27*	*5·18*	*5·08*	*5·16*
	100·0	101·20	98·97	96·40	95·88	95·37	96·57	100·0	99·08	98·53	97·05	95·40	93·55	95·03
(2) Average train-load	*135·28*	*138·47*	*134·33*	*129·48*	*125·23*	*127·99*	*131·44*	*130·67*	*126·64*	*124·27*	*121·53*	*118·64*	*118·93*	*121·86*
	100·0	102·36	99·30	95·71	92·57	94·61	97·16	100·0	96·92	95·10	93·00	90·79	91·02	93·26
(3) Wagon-miles per engine-hour	*108·27*	*112·80*	*114·27*	*115·26*	*114·82*	*116·66*	*118·10*	*121·5*	*119·15*	*123·06*	*126·78*	*129·52*	*130·15*	*129·03*
	100·0	104·18	105·54	106·46	106·05	107·75	109·08	100·0	98·07	101·28	104·35	106·60	107·12	106·20
(4) Train-miles per train-hour, freight	*8·2*	*8·64*	*9·05*	*9·34*	*9·76*	*9·74*	*9·77*	*8·31*	*8·43*	*8·89*	*9·13*	*9·66*	*9·53*	*9·21*
	100·0	105·37	110·37	113·90	119·02	118·78	119·15	100·0	101·44	106·98	109·87	116·25	114·68	110·83
(5) Net ton-miles per engine-hour	*417·29*	*440·49*	*438·79*	*431·33*	*427·82*	*436·32*	*448·06*	*454·85*	*443·38*	*452·55*	*454·61*	*457·86*	*457·04*	*459·56*
	100·0	105·56	105·15	103·36	102·52	104·56	107·37	100·0	97·48	99·49	99·95	100·66	100·48	101·03
(6) Train-miles per train-hour, coaching	*13·53*	*13·34*	*13·43*	*13·42*	*13·52*	*13·74*	*13·96*	*14·04*	*14·21*	*14·37*	*14·49*	*14·61*	*14·56*	*14·60*
	100·0	98·60	99·26	99·19	99·93	101·55	103·18	100·0	101·21	102·35	103·20	104·06	103·70	103·99
(7) Locomotive stock, percentage of number available to stock	*74·76*	*77·33*	*78·45*	†*78·59*	†*77·06*	†*75·66*	†*76·52*	*75·41*	*82·92*	*83·08*	†*86·35*	†*85·33*	†*83·59*	†*81·99*
	100·0	103·44	104·94	105·12	103·08	101·20	102·35	100·0	109·96	110·17	114·51	113·15	110·85	108·73
(8) Engine-miles per day per engine in use	*103·06*	*103·90*	*103·35*	*102·75*	*102·77*	*105·97*	*107·88*	*97·82*	*94·60*	*95·18*	*99·54*	*102·76*	*106·77*	*110·48*
	100·0	100·82	100·28	99·70	99·72	102·82	104·68	100·0	96·71	97·30	101·76	105·05	109·15	112·94
(9) Coal consumption, coaching (miles per lb.*)	*·024839*	*·024444*	*·024361*	*·024027*	*·024102*	*·023992*	*·024102*	*·019205*	*·018709*	*·019298*	*·019433*	*·019470*	*·019372*	*·019320*
	100·0	98·41	98·08	96·73	97·03	96·59	97·03	100·0	97·42	100·49	101·20	101·38	100·87	100·60
(10) Coal consumption, freight (miles per lb.*)	*·017819*	*·018265*	*·018532*	*·018553*	*·018864*	*·018925*	*·019026*	*·015053*	*·015316*	*·015523*	*·015430*	*·015610*	*·015598*	*·015576*
	100·0	102·50	104·00	104·12	105·86	106·21	106·77	100·0	101·75	103·12	102·50	103·70	103·62	103·47
Total	100·0	102·24	102·59	102·07	102·17	102·94	104·33	100·0	100·0	101·48	102·74	103·70	103·50	103·61

Unit	London & North Eastern Railway							Southern Railway						
(1) Average wagon-load	*5·8*	*5·97*	*5·91*	*5·82*	*5·71*	*5·70*	*5·82*	*4·82*	*4·93*	*4·99*	*5·09*	*5·05*	*4·99*	*5·05*
	100·0	102·93	101·90	100·34	98·45	98·28	100·34	100·0	102·28	103·53	105·60	104·77	103·53	104·77
(2) Average train-load	*137·21*	*138·07*	*133·80*	*131·27*	*127·10*	*128·81*	*131·67*	*109·78*	*108·05*	*107·91*	*108·31*	*103·72*	*101·36*	*103·54*
	100·0	100·63	97·51	95·67	92·63	93·88	95·96	100·0	98·42	98·30	98·66	94·48	92·33	94·32
(3) Wagon-miles per engine-hour	*122·47*	*121·51*	*124·29*	*126·97*	*128·15*	*130·78*	*132·01*	*103·86*	*100·33*	*100·10*	*100·65*	*100·21*	*99·99*	*99·16*
	100·0	99·22	101·49	103·67	104·64	106·78	107·79	100·0	96·60	96·38	96·91	96·49	96·24	95·47
(4) Train-miles per train-hour, freight	*8·22*	*8·22*	*8·59*	*8·91*	*9·37*	*9·30*	*9·22*	*9·69*	*9·34*	*9·45*	*9·53*	*9·72*	*9·79*	*9·66*
	100·0	100·0	104·50	108·39	113·99	113·14	112·16	100·0	96·39	97·52	98·35	100·31	101·03	99·69
(5) Net ton-miles per engine-hour	*460·26*	*469·79*	*472·23*	*473·35*	*469·80*	*477·18*	*490·68*	*342·97*	*340·24*	*344·58*	*346·64*	*336·03*	*329·29*	*332·73*
	100·0	102·07	102·60	102·84	102·07	103·68	106·61	100·0	99·20	100·47	101·07	97·98	96·01	97·01
(6) Train miles per train-hour, coaching	*13·34*	*13·66*	*13·69*	*13·84*	*14·02*	*14·13*	*14·23*	*14·11*	*16·80*	*16·96*	*17·09*	*17·08*	*17·56*	*17·53*
	100·0	102·40	102·62	103·75	105·10	105·92	106·67	100·0	119·06	120·20	121·12	121·05	124·45	124·24
(7) Locomotive stock, percentage of number available to stock	*77·19*	*79·94*	*78·25*	†*77·77*	†*79·83*	†*79·14*	†*80·65*	*75·83*	*75·05*	*75·32*	†*75·70*	†*76·39*	†*75·23*	†*76·04*
	100·0	103·56	101·37	100·75	103·42	102·53	104·48	100·0	98·97	99·33	99·83	100·74	99·21	100·28
(8) Engine-miles per day per engine in use	*98·88*	*100·90*	*99·66*	*99·37*	*99·05*	*101·80*	*101·58*	*117·74*	*117·16*	*117·99*	*118·96*	*118·93*	*122·65*	*123·44*
	100·0	102·04	100·79	100·49	100·17	102·95	102·73	100·0	99·51	100·21	101·04	101·01	104·17	104·84
(9) Coal consumption, coaching (miles per lb.*)	*·018879*	*·019098*	*·019172*	*·019095*	*·019301*	*·019320*	*·019339*	*·021968*	*·023798*	*·023958*	*·024254*	*·024266*	*·024576*	*·024667*
	100·0	101·16	101·55	101·14	102·23	102·34	102·44	100·0	108·33	109·06	110·41	110·46	111·87	112·29
(10) Coal consumption, freight (miles per lb.*)	*·014393*	*·014691*	*·014820*	*·014786*	*·015161*	*·015174*	*·015202*	*·018426*	*·018608*	*·018702*	*·018498*	*·018939*	*·018875*	*·018650*
	100·0	102·07	102·97	102·73	105·34	105·43	105·62	100·0	100·99	101·50	100·39	102·78	102·44	101·22
Total	100·0	101·61	101·73	101·98	102·80	103·50	104·48	100·0	101·97	102·65	103·34	103·00	103·13	103·41

* Converted from " lb. per mile " to secure relative percentage variation
† Includes engines in serviceable condition stored and temporarily withdrawn from service

Operating efficiency tables for the four group railways

year of 101,000 fewer tons of coal on the passenger train services, and an economy of 157,000 tons upon the freight train services.

Attention is also invited to the tables relating to each of the main line railways, and, without making any comparisons between the results of the respective companies, mention may be made of one or two outstanding items which have contributed to the improvement shown in the general table. The experience of all companies was very similar in regard to the loading of freight traffic, with the exception of the wagon load on the Southern Railway, which has shown a marked increase coincident with the development of the Kent coalfield in recent years. The rate of movement of freight traffic on the G.W.R., as well as the Northern lines, has been consistently improved. All four companies showed betterment in respect of the speed of coaching trains, prominence being shown by the Southern, where the elimination of the slower moving local and suburban trains, converted to electric working has no doubt assisted the extremely satisfactory averages attained. Increased availability of locomotives, and greater daily unit mileage, are features in the L.M.S.R. table; and in the matter of coal consumption, the improvement effected in Southern coaching and Great Western freight services will be noticed.

Returning to the general table, and summarising in a few words last year's operating results; whether the final index figures may be accepted as representing the rate of improvement or not, it is evident that the general standard of operating efficiency on the British railways was considerably enhanced last year as compared with former standards, and, in face of the onerous conditions of working to which they have been subjected in recent years, and the necessity for drastic curtailment of operating expenditure, the results can be regarded only as highly satisfactory.

MOTOR TROLLEY MAINTENANCE OF PERMANENT WAY IN ARGENTINA—III*

This, the concluding instalment, describes the trolleys used, and sums up the savings and advantages of the new system

By F. L. CRESWELL, Engineer-in-Chief, B.A.G.S. Railway

THE trolleys in use, after the correction of a few minor details, have proved very satisfactory in service. They are powered by air-cooled V twin motors of from 1,100 to 1,300 c.c., with a friction and chain drive to a sprocket on the rear axle. The construction is simple and allows of easy maintenance, whilst the motor is robust and rarely gives trouble. The majority of the failures have been due to components such as leaking petrol tanks, broken petrol and oil feed pipes, magnetos and controls, caused by vibration; these faults are gradually being eliminated, and with the foremen who, with few exceptions, had no previous experience with motors, becoming accustomed to the trolleys, the delays due to breakdowns are approximately ½ per cent. of the days worked.

Two types of trolleys are in service, distinguished by lengths of the chassis with corresponding difference in seating capacity. The long model is more convenient for general purposes, and the slight advantage of lighter weight in the short model is being taken advantage of by assigning these to the flying gangs so that loading on to wagon for transport purposes is easier. The weight of the long model is 550 kg. and of the short model 520 kg., the seating capacity of the two types being 10 and 8 respectively.

Periodical inspection of the trolleys is carried out by four travelling mechanics to each of whom are allotted some 40 trolleys, in this way minor repairs and adjustments are systematically carried out and the maximum efficiency obtained from the vehicles. The revisers are provided with railcars, and carry a limited number of spare parts as well as a complete spare motor. In cases of trolley breakdowns they are advised, by telegram, from the gang foreman. It is thus possible to avoid the delay which would be experienced were the repairs to be done in a central shop.

General repairs and overhauls are carried out at the Way and Works shops where a definite programme of replacement of spare parts, decarbonisation, and painting of the chassis is followed, it being the practice to carry out the overhaul every eighteen months. The average cost of the first general overhaul to gang trolleys has worked out at slightly under $100.00† per trolley per annum. It is found that the greatest wear takes place in the sliding mechanism of the drive friction wheel, which gives an average of two years' life, and in the friction discs, which are estimated to last 2½ years with normal use.

The average petrol and oil consumption of the trolleys is 9·7 and 197 kilometres per litre respectively, and these figures, although satisfactory, will doubtless be improved upon once the drivers become more experienced. The average run per trolley per month is 570 km.

The trolleys are provided with one or two trailers, according to the size of the gang, converted from pump trolleys in stock by the provision of a coupling bar and free-wheel device, thus allowing of the transport of the complete gang, tools, materials, &c. The trailers can be used alone, if required, by a simple adjustment of the free-wheel device. Garage accommodation for the motor trolley and trailers is provided at the gang headquarters.

COST OF RUNNING MOTOR TROLLEYS, INCLUDING INCIDENTAL EXPENSES

163 trolleys in service
19 as spares.

	$
Consumable materials (petrol, oil, &c.)	26,784
Garage maintenance, petrol deposits, &c.	2,500
District trolley revisers	14,160
Incidental repairs and transport	3,600
Two general overhaul gangs	17,880
Training and supervision of foremen	2,700
Government inspection	1,500
Replacement of two cars per year as accidents	3,000
Value of spare parts	21,600
Depreciation on plant and equipment in workshops	1,800
	$95,524

ANNUAL DEPRECIATION ALLOWED FOR MOTOR TROLLEYS

The original cost of the motor trolleys was $1,700 m/n, and having allowed for overhaul and replacements as above, it is

* The first article of this series appeared in our issue of October 4, and the second on November 1.

† £1 = $11·45 at par.
£1 = approx. $20·00 at present rate of exchange.

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estimated that the life of the cars is seven years and of the standby cars, fourteen years, the yearly depreciation being:—

	$
163 × $245·00	39,935
19 × $122·50	2,328
Total annual depreciation	$42,263

Annual cost per car per annum :—

$$\frac{\$95,524 + \$42,263}{163} = \$845{\cdot}00$$

DIRECT YEARLY SAVING BY THE USE OF MOTOR TROLLEYS

The total annual saving in revenue expenditure at the present time is as follows :—

	$	$
1. Reduction in gang foremen	129,360	
2. Reduction in gang cooks	307,298	
3. Reduction in horse allowances	43,263	
4. Reduction in the maintenance of plant and equipment	54,385	
		534,306
Less—	$	
1. Cost of running motor trolleys	95,524	
2. Depreciation	42,263	
		137,787
		$396,519

The total direct saving in the future—*i.e.*, once the whole of the surplus foremen have been pensioned or otherwise absorbed—will be :—

	$
Saving at the present time (as above)	396,519
Additional future saving on the suppression of the surplus foremen	352,800
	$749,319

Comparative Costs of Fixed Flying Gangs and Motor Trolley Gangs

The comparison has been made between motor equipped gangs and the establishment in 1928 when only a limited number of fixed flying gangs were employed.

Comparing the latter system with the gangs now employed, by providing motor trolleys to overcome the disadvantages previously referred to, it is estimated that a saving of $320·00 per gang per annum has been made, or of $3,000 per gang per annum, allowing for the elimination of track revisers, or a total of $29,760 and $279,000 respectively for the 93 fixed flying gangs employed.

A Government certificate is required by all drivers of motor propelled rail vehicles, and as some 350 certificates are necessary for inspectors, foremen and first "peones," of which up to date only approximately a half have been granted, authorisation has been given, as a provisional arrangement, to allow non-certificated foremen and men to drive the trolleys.

Light Motor Inspection Trolleys

With the provision of motor-trolleys and consequent extension of gang sections, revision by the inspectors was rendered more difficult and, to permit of improved transport facilities, a trial lot of seven light inspection trolleys were acquired and put into service in May, 1933. These were powered by 350 c.c. single cylinder engines, but structural defects developed and the design has now been altered. A further eight trolleys, powered by 350 c.c. flat-twin engines, were purchased and put into service last year, but it is yet too early to give a definite report on these or on the modified units first received.

General Remarks

The results obtained by the reorganisation of the gangs has been highly satisfactory, and the saving effected has greatly exceeded the estimate put forward when the original recommendation was made.

No difficulty has been experienced as regards the safe running of the motor trolleys. The foreman informs the stationmaster in the morning to what point he is proceeding, and inquires as to the running of trains additional to those shown in the timetable. Special trains are advised of the locality at which a gang is working and the driver keeps a lookout for the possibility of a trolley on the track. In addition, on those stretches where the visibility is poor owing to curves in cuttings, the foremen are provided with portable telephones, by means of which they can inquire of the nearest station, or of control, as to the proximity of trains before enrailing the trolleys.

Owing to the reduction in the number of gangs per section, it is possible for the superintendence staff to control the work much more closely and to indicate, in diagrammatic form, the movement of the gangs and expenditure of labour on maintenance works. An example of such a diagram is reproduced. One is kept for each gang. The man-days per kilometre are indicated, and show clearly any portion of the track where excessive maintenance is involved. Indication is given of track imperfections as shown on the Hallade recorder as well as the cost of correction. Other details, such as cutting fireguards, cleaning side ditches, repairing fencing, work in stations and various other works are shown, as well as the track materials used. A comparison of the actual cost of works and the budget allowance for the section is therefore available and possibilities of economy or necessity for redistribution of gang strength easily discernible.

The following explains the large key letters on the diagram :—

A—Diagrammatic plan of gang section showing kilometrages, track material and ballast, as specified under Reference, fences, level crossings, roads, streams, ditches, and fire-guards paralleling the track. Length and radius of curves bridges and culverts, indications as to heavy gradients, cuttings and banks, and position of stations.

B—Defects recorded by Hallade instrument are to be shown by an X. When the defect is removed, a circle is drawn round the X and the date figured.

C—Number of men employed in the gang. The normal number of men authorised is also shown in the same column (on the original full-size diagram these are in colour).

D—Shows progressive overhaul, slacks lifted, fishbolts tightened, and track drains cleaned.

E—Total day-work units in cleaning ditches, repairing fences, cutting and burning grass on the track, changing of permanent way materials, and various works effected on the track.

F—The budget allowance of wages per kilometre and the progressive expenditure. Thus it is always possible to see at a glance how the wages spent at any time compare with the allowance.

G—Track materials used and produced per kilometre during the financial year are shown.

H—If any derailments due to defective track occur, an X is shown at the bottom of the sheet at the corresponding kilometre.

I—Men-days incurred for works carried out in stations, such as cutting grass, repairing tracks, cleaning of w.cs. and cesspools, general work in station grounds, and fixing of crossings and sidings.

J—A general résumé of wages involved in all classified works effected by the gang during the month.

Such information, giving the work done to any stretch of track, is of great assistance to the inspecting engineers who may wish to make investigations on the site regarding the state of any part not up to standard. From the records now kept, changed methods have already resulted.

The reorganisation of the gangs and selection of foremen has involved the examination of the records of each man and necessitated the modification of gang lengths and inspectors' and engineers' sections. The introduction of new methods of work has not proved simple, owing to the difficulty enountered in overcoming the rooted prejudices of foremen and even permanent way inspectors accustomed to long established practices, but with the enthusiastic co-operation of the District Engineers it was eventually accomplished with the degree of success described in this article.

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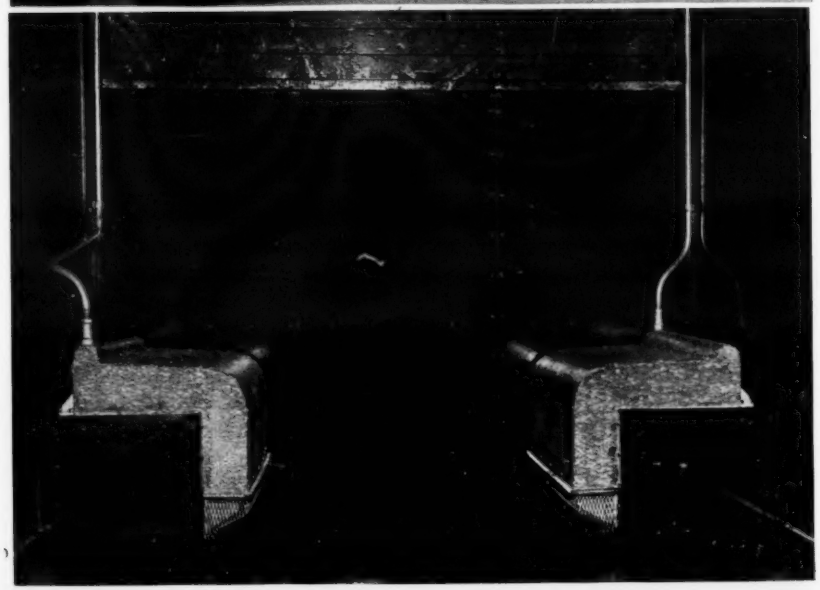
British Freight Rolling Stock

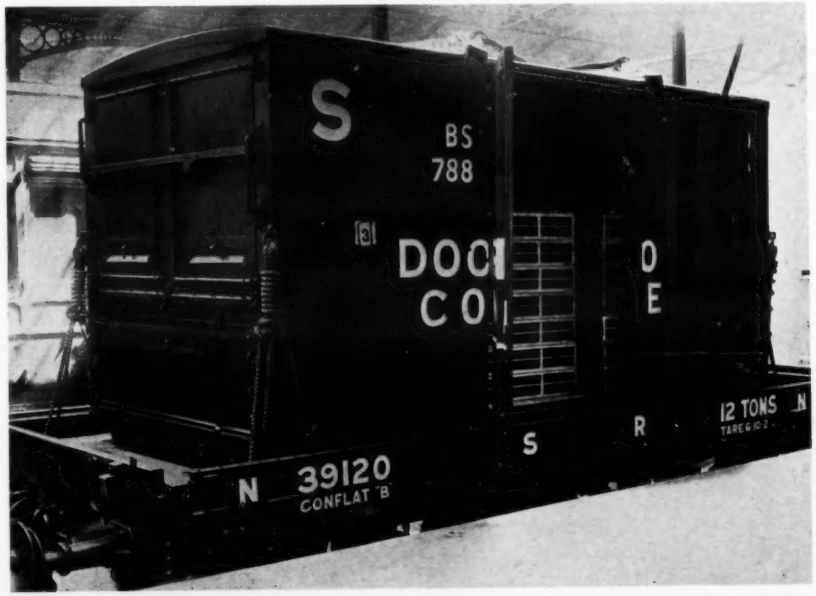
V.—Southern Railway containers

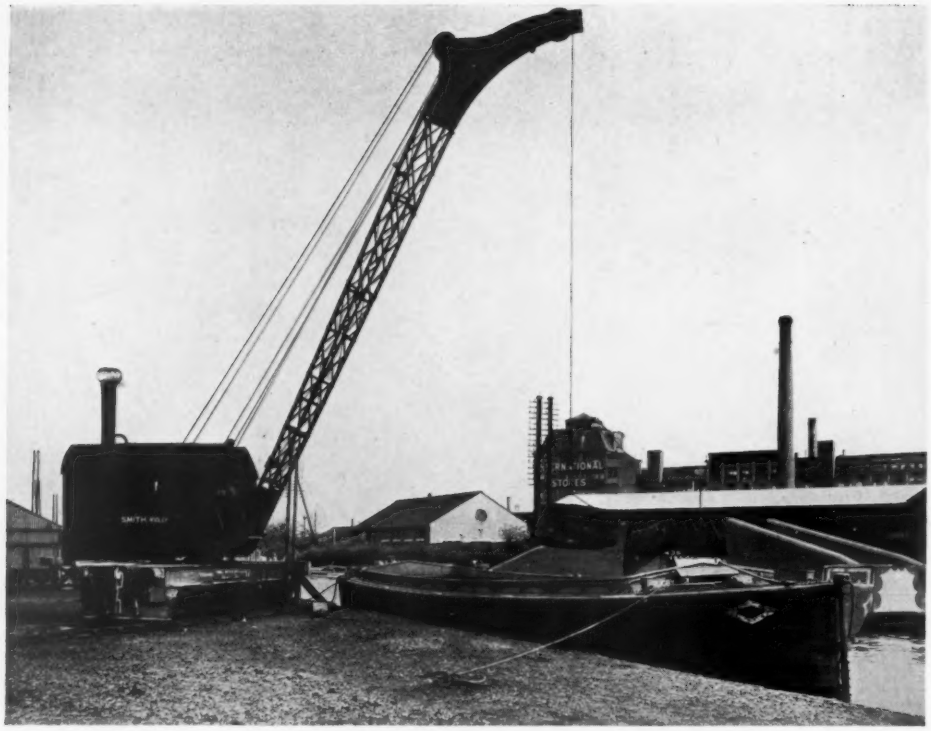


The first illustration shows a Southern Railway Type F insulated container for the conveyance of chilled and frozen meat. It is generally constructed of oak framing, having ¼-in. armoured plywood exterior panelling. The roofs, walls and floor are insulated with slab cork (to a thickness of 2 in.) and lined with Presdwood, whilst the floor is of metal plate, to facilitate thorough cleaning. The container is equipped with four Drikold units, one at each corner of the roof, each capable of holding 50 lb. solid carbon di-oxide. These can be filled through the roof, without having to open the side or the end doors of the container. The arrangement of dry-ice bunkers is shown in the second illustration.

Similar in external construction to the Type F container is Type M, which is used for fresh meat. The interior is not lined, but special attention has been paid to ventilation. The sides and ends are fitted with louvre ventilators in the lower portion of the body, and the end ventilators are provided with a flap. Four torpedo ventilators are positioned in the roof, and there is a false roof with air spaces, to allow circulation of air during transit between the outer and inner roofs. Meat bars are also fitted, with seven double hooks to a bar, conveniently spaced for the conveyance of 77 carcasses of sheep, lambs or pigs. The flooring is of Dalatem metal plates.

Type B.S. (third illustration) is a ventilated container for the conveyance of soft fruit. The general framing is similar to the types referred to above, and generally conforms in size and construction to the Type B Southern Railway containers, which have been in service for a number of years. The ends of the container have been fitted with louvre ventilators, which can be opened or shut as desired. The floors are of 1¼ in. deal boards. These containers carry 40 wire trays, each holding thirty-six 2-lb. or 3-lb. baskets.





Unloading sleepers from barge at Hayes sleeper depot

Stacking sleepers unloaded from barge

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NEW SLEEPER DEPOT, GREAT WESTERN RAILWAY

A new and up-to-date sleeper creosoting and chairing depot has recently been brought into use at Hayes

AT Hayes, eleven miles from Paddington, the Great Western Railway has recently brought into operation a new and up-to-date sleeper depot, replacing the old depot at the same place. The new depot covers a larger area and is at the higher level of the adjoining canal by which the sleepers arrive in barges, each barge containing about 1,100 sleepers, or a correspondingly smaller number of crossing timbers. From the barges the sleepers are unloaded by cranes and stacked.

There are three similar cranes, each designed to pass through the standard loading gauge and capable of the following duty:—

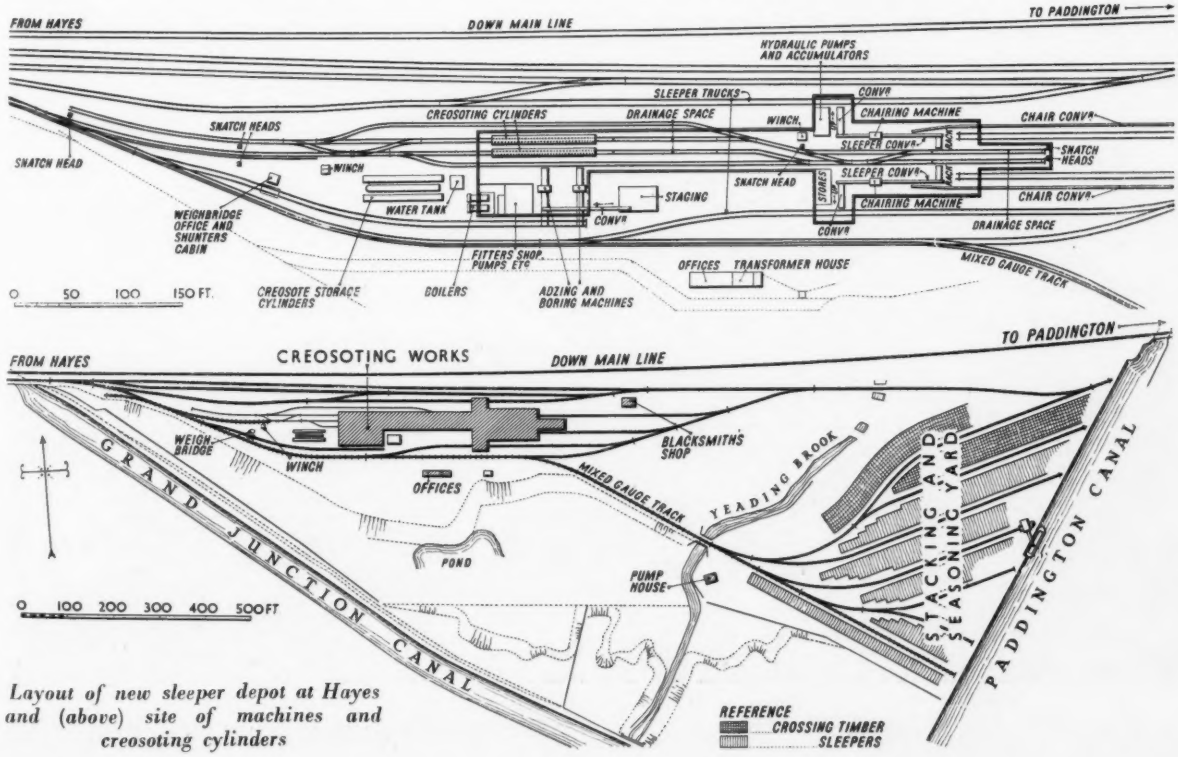
Lifting 5 tons at 18 ft. radius with snatch block.
„ 2½ „ „ 28 ft. „ on single end of rope.
„ 1½ „ „ 40 ft. „ „ „ „ „ „

and travelling with any of these loads to the stated radii with the jib at any angle to the track.

These cranes are used also for loading sleepers and timbers from the stacks on flat wagons or trolleys and hauling them to the adzing and boring shed, or creosoting cylinders, as required. The cranes each weigh 42 tons and were built by Thomas Smith & Sons (Rodley), nr. Leeds. The stacking yard has a capacity for about 750,000 sleepers for seasoning, in addition to crossing timbers, and the whole depot covers an area of about 21½ acres. The plant has been designed to deal with 500,000 sleepers annually, and to enable the whole of the operations of impregnating and preparing the sleepers ready for the track to be carried out under cover.

The sleepers from the stacks are unloaded from the flat wagons on to a staging and then on to a roller conveyor which takes them to the adzing and boring machines, the product of T. Robinson & Son. From the conveyor a man places the sleepers on an endless chain which travels through the machine, passing them under the adzing knives, then under the augers by which the four bolt holes are bored in each sleeper, then under a brush, which removes the shavings and borings, and finally deposits them on to the narrow-gauge trolleys whence they are conveyed to the creosoting cylinders. The adzing and boring machine is equipped with an extractor through which the shavings and sawdust are passed into a covered truck standing on the adjacent line. The adzing and boring machine also saws the sleepers to a uniform length of 8 ft. 6 in., and automatically rejects any sleeper over 5¼ in. thick. Its capacity is six sleepers a minute. The adzing and boring machine from the old depot is installed as a standby in case of breakdown.

Ten trolley loads of sleepers can be accommodated in each cylinder, the capacity of which is 600 sleepers. The crossing timbers are taken from the stacks direct to the creosoting shed. The average time of the Baltic fir sleepers in the creosoting cylinders is from 1 to 1½ hours, and each sleeper will pick up about three gallons of creosote in that time. After the trolleys are run into the cylinder—the doors of which are sealed by hydraulic pressure inside a lead ring, and can be opened or closed in a matter of a few seconds—a vacuum of about 25 in. is created, after which the creosote is pumped in up to a



Layout of new sleeper depot at Hayes and (above) site of machines and creosoting cylinders

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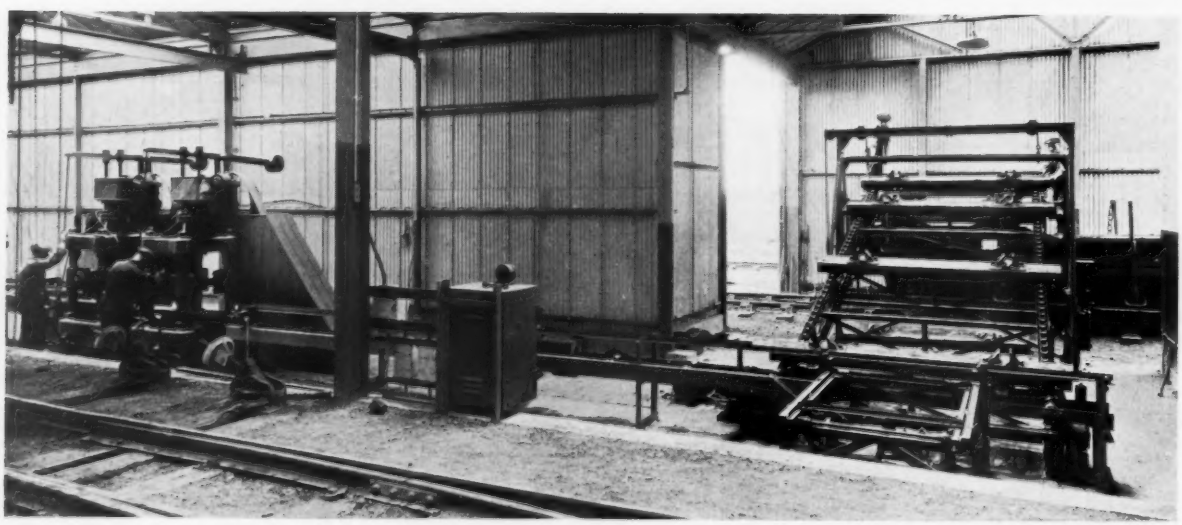
Placing chairs on conveyor belt

(*Right*) : *Inserting bolts and washers in sleepers. Loading them on to the conveyor. Placing chairs (seen travelling towards sleeper belt)*

(*Below*) : *Chairing machine, left, outgoing belt, centre, and right, elevator for loading sleepers on to trucks*



NEW SLEEPER DEPOT AT HAYES,

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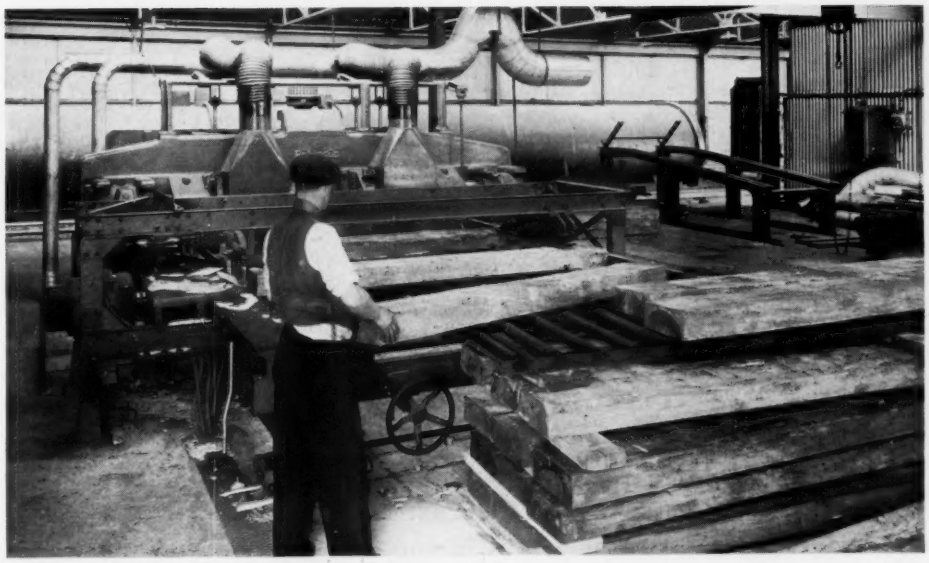
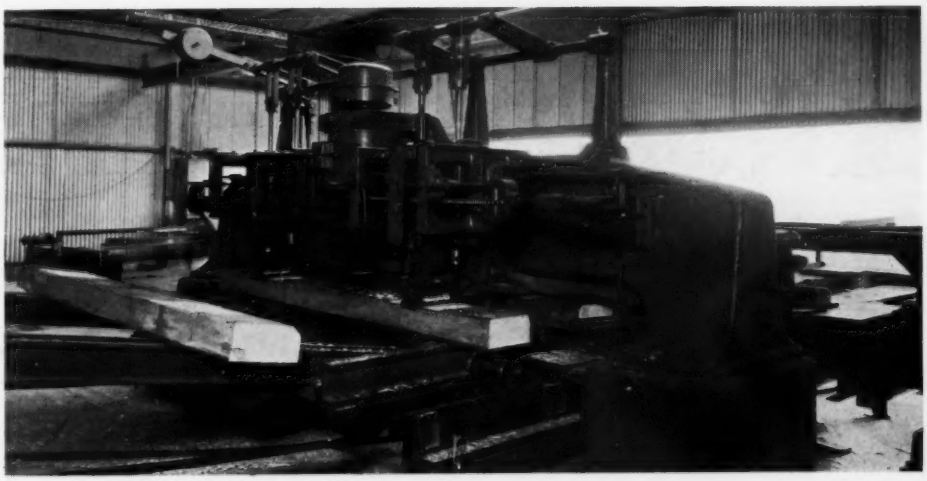
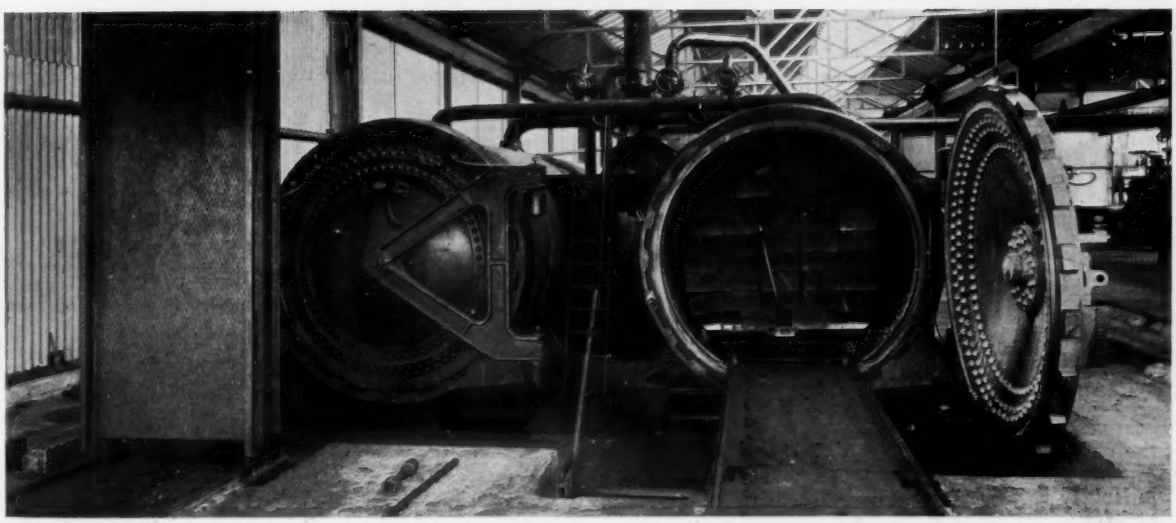


Loading sleepers from conveyor on to adzing and boring machine. Position of reserve machine on right



Left : Sleepers emerging from the adzing and boring machine

Below : Creosoting cylinders. Note drawbridge raised on left



GREAT WESTERN RAILWAY

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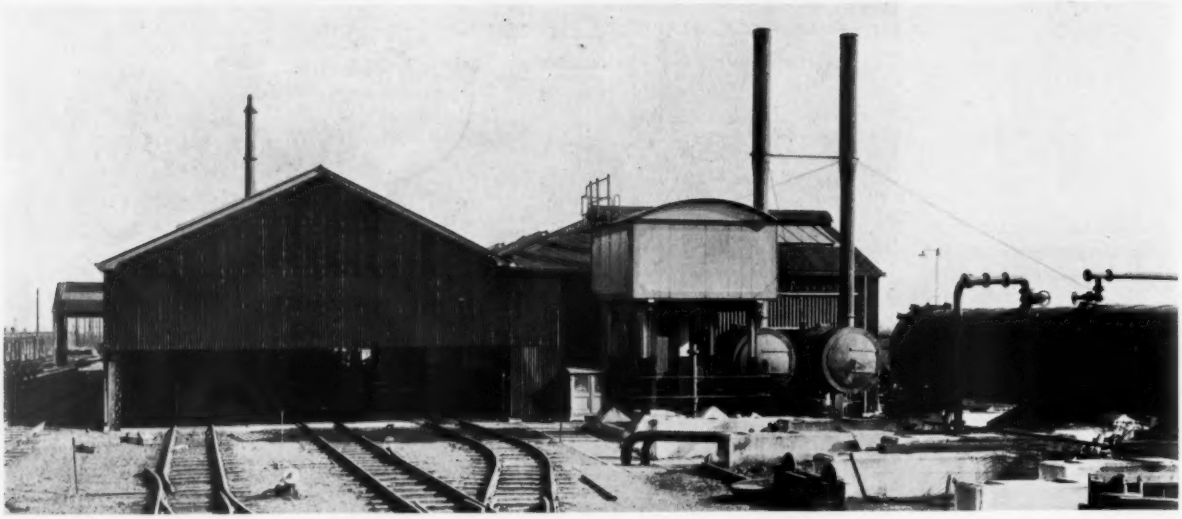


General view of G.W.R. creosoting plant

maximum pressure of 200 lb. per sq. in. A much lower pressure, however, will usually suffice to cause the necessary absorption of creosote into Baltic fir sleepers. With Oregon pine, of which many of the crossing timbers now consist, pressure, as well as the time for impregnation, is, of course, more.

Working tanks are provided for each cylinder, in addition to storage tanks having a total capacity of about 65,000 gallons of creosote. It is expected that at full output the consumption of creosote will be between 1 and 1½ million gallons annually. Each of the creosoting cylinders is 90 ft. long with an inside diameter of 6 ft. 9 in., the largest in the country.

From the cylinders the trolleys are hauled out by means of a wire rope and winch to the chairing plant where the sleepers are unloaded by hand on to skids, at each side of which an operator stands and inserts the bolts and ribbed washers. The sleepers are then inverted and pushed down the skids on to a conveyor where the chairs are placed by hand on the sleepers and the nuts started. They then enter the chairing machine, which screws nuts home with friction driven spanners whilst the chairs are pressed down under a 10-ton hydraulic pressure.

From the chairing machine the sleepers proceed by an out-feed conveyor to an elevator, which automatically lifts them to the sleeper truck standing on the adjacent line. The Great Western normally uses 4-wheeled crocodile trucks each of which can convey 160 chaired sleepers.

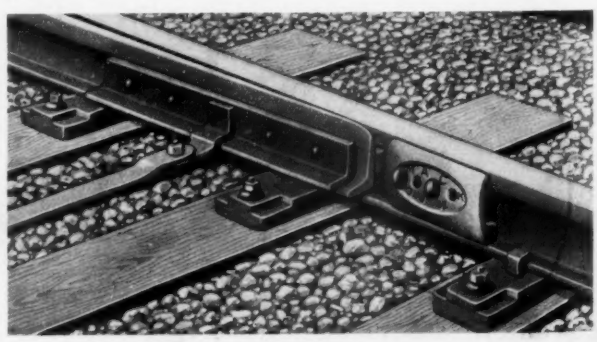
The chairing machine, which has been in use for some years in the old depot, was built at Swindon in the company's workshops, and the elevator and conveyors are the product of the North Acton Conveyor & Elevator Co. Ltd. The chair conveyor was supplied by Mitchell Engineering Limited.

From the foregoing it will be realised that the works have been equipped with the latest time and labour-saving devices. The machinery is electrically driven, and a modern electric pumping plant is provided for water supply, not only to the depot but to the adjacent station buildings and for emergency fire hydrants.

The normal staff employed at the depot is 57, and the maximum output when a second chairing plant is in operation will be 2,200 sleepers a day, with a corresponding reduction in the number of crossing timbers dealt with.

Point Protectors

THE Egyptian State Railways have recently decided to equip facing points with the Mack point protector (illustrated), and have recently placed an order with the P. & M. Co. (England) Ltd., for 500 of these fittings. Where undercut switches and straight stock rails, rather than straight switches and joggled stock rails, are used for facing points, these point protectors have proved very effective in minimising side wear on a number of overseas railways on which they are largely used. As it is not recommended that these point protectors should be installed where speeds much exceed 50 m.p.h. they are being confined in Egypt to facing points at running junctions where this speed is not attained, and in station yards. The protector consists of a reversible manganese plate 8 in. in length, a washer of special design to back up this plate, and a washer as a filler outside the rail. The outer contour of the plate is tapered and radiused to provide for a smooth wheel run-on, and has the effect of a supplementary point diverting wheel impact from the tip of the point proper. Experience shows that in doing so no jolt is given to passing vehicles.



A 2,160-ton train of loaded hoppers being hauled by a 2-6-2 + 2-6-2 type Beyer-Garratt locomotive en route from the Rio Tinto mines to Huelva, a distance of 52 miles, over the 3 ft. 6 in. gauge private railway of the Rio Tinto Co. Ltd.

XUM

Fig. 1—General view of plant

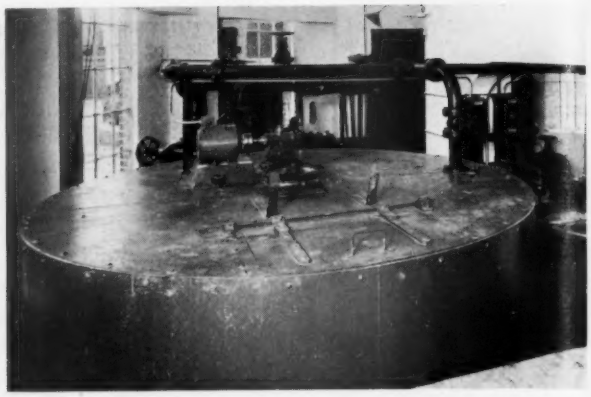


Fig. 3—One of the vessels used for preparing reagent solutions

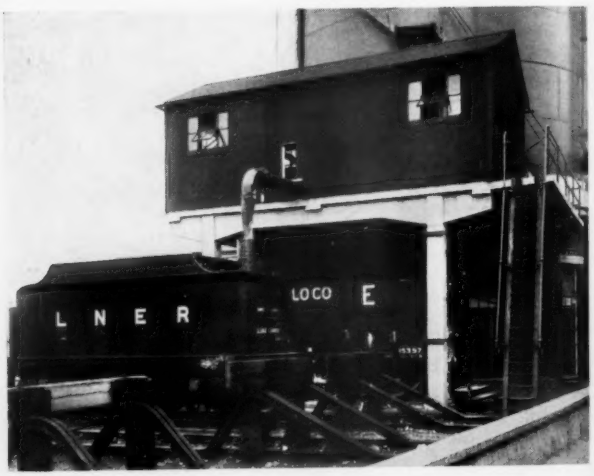


Fig. 4—Discharging sludge into tender tank

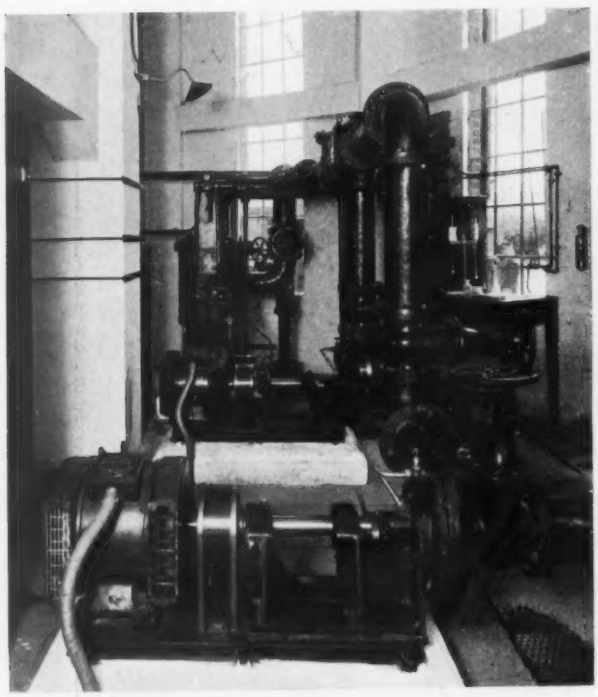


Fig. 2—Booster pumping set

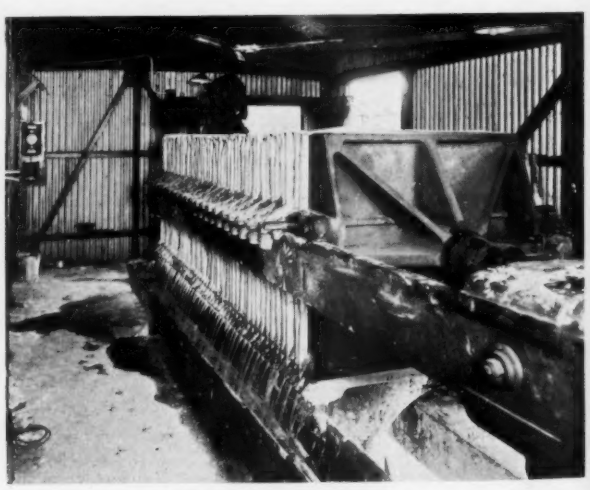


Fig. 5—Filter press in elevated house

NEW BOBY SIMPLEX HIGH CAPACITY WATER SOFTENER AT KING'S CROSS, L.N.E.R.

A LARGE WATER SOFTENER AT KING'S CROSS, L.N.E.R.

This plant is of the Boby Simplex type and has the largest water softening capacity yet installed on the L.N.E.R. system

THE water softening plant recently installed at King's Cross station, of which illustrations and particulars are given herewith, has a capacity of 40,000 gall. an hour, or nearly one million gallons a day, and is the largest softener yet erected on the London & North Eastern Railway.

Its design embodies the most modern features, so that all automatic measuring and chemical dosing equipment is located at ground level, in the house upon which is superimposed the main tank; supervision does not, therefore, entail visiting the top of the softener. The water supply is provided by the Metropolitan Water Board, and is raised to the top of the plant by the electrically driven booster pumps shown in one of the accompanying illustrations, Fig. 2.

The water on leaving the pump passes into and through an automatic distributor by which the chemical reagents are pumped to the inlet of hard water at the top of the plant in exact proportion to the amount of water passing to the plant at any moment. The distributor, which appears in Fig. 2 behind the pumps, details of which are not visible, is operated entirely by the action of the hard water. For the preparation of reagent solutions, four vessels are provided; two of them, working alternately, provide lime and soda solution, and one of them is shown in Fig. 3. As will be seen, the agitating gear, by which an even density of the solution is maintained, is operated by an electric motor and reducing gear fixed on the cover of each vessel. The other two vessels of smaller size, one of which can be seen in Fig. 3 at the right hand of the lime soda vessel, provide supplies of sodium aluminate.

The hard water and reagents on reaching the top of the softener are together delivered into a down tube where their intimate mixing is completed by a paddle revolving within the tube and driven by a small electric motor, forming the only moving parts above ground level. It results from the treatment that water is delivered into the storage tank clear and softened to below 3° grains per gallon of hardness.

The disposal of sludge, always an important matter in connection with lime soda softeners, is dealt with in such a manner that the softened water which is discharged with the sludge is all recovered and the sludge itself is reduced to the smallest possible bulk for final removal and disposal. The sludge is evacuated from the softener into the tender-tank shown in Fig. 4, from which it is pumped into and through the filter-press contained in the elevated house, the interior of which, with the filter-press, is shown in Fig. 5. The sludge, which leaves the press as a solidified cake, is discharged into the truck seen behind the tender tank in Fig. 4, and is conveyed therein to a dump. The water discharged from the filter-press flows through a small tank from which it is pumped back into the top of the softener.

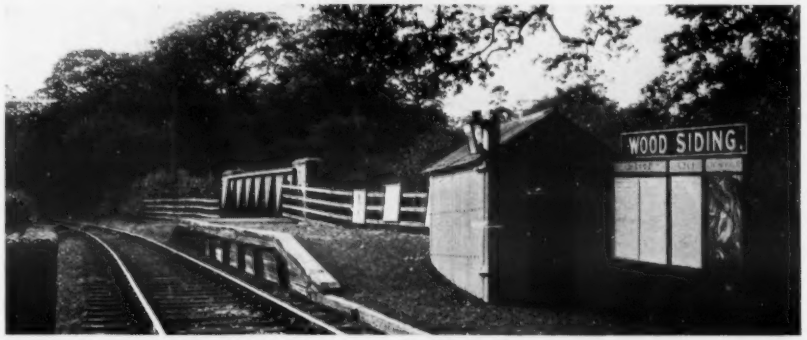
Sir Robert Horne presenting the Silver Challenge Trophy of the G.W.R. Social and Educational Union to Mr. H. Cook, of Swindon, for his entry in the Great Western Railwaymen's Arts and Crafts Exhibition (*see article on p. 984*)

XUM

Three stages of Brill line rolling stock. Top, a train of the 'seventies headed by a single-cylinder Aveling & Porter engine; centre, a Manning-Wardle tank engine on a mixed train at Quainton Road in the 'nineties; and, bottom, a recent view of one of the ex-Inner Circle Beyer Peacock locomotives

Above: The terminal station at Brill

Left: Wotton station and goods shed, a typical station on this rural single-track line



Wood Siding station, showing parapet of bridge over G.W.R.

CLOSING THE BRILL BRANCH

(see news article on page 982)

RAILWAY NEWS SECTION

PERSONAL

Sir Herbert Walker, K.C.B., General Manager of the Southern Railway, was, on December 3, appointed Chairman of the General Managers' Conference at the Railway Clearing House for the year 1936.

G.W.R. Appointments

The following appointments were approved by the Directors of the Great Western Railway on November 29:—

Mr. W. J. Thomas, Deputy Chief Docks Manager, Cardiff, to be Chief Docks Manager, Cardiff, as from January 1 next, vice Mr C. S. Page, who is retiring.

Mr. F. H. D. Page, Assistant Signal Engineer, Reading, to be Signal Engineer, Reading, as from February 3 next, vice Mr. C. M. Jacobs, who is retiring.

Lt.-Col. R. Tristram Harper, O.B.E., F.C.A., a Director of the Buenos Ayres Great Southern and Buenos Ayres, Ensenada & South Coast Railways, and Secretary of the Bahia Blanca & North Western Railway, has joined the board of the City of Buenos Ayres Tramways Co. (1904) Ltd.

Mr. F. W. Mottley, who, as we recorded last week, has been appointed European Freight Manager, Canadian Pacific Railway, joined that company in 1907 as a clerk in the Traffic Department. A year later he became Secretary to the General Traffic Agent, and, in 1910, was appointed Secretary to the European General Manager. In 1911 he took over the duties of Chief Clerk in the Traffic Department of the Canadian Pacific Express, and in 1919 was promoted to be Superintendent for Europe of that company, the position he now vacates to become European Freight Manager, C.P.R.

Mr. A. H. Smith has been appointed London Express Agent of the Canadian Pacific Express Company. He joined the Canadian Pacific Railway, in London, in May, 1910, was transferred to the express company in 1912 and became Accountant in 1919 and Chief Clerk in May, 1931.

The British and Chinese Corporation Limited announces that Mr. B. T. B. Boothby, M.Inst.C.E., who has been its representative in China for many years, has retired from that position and is now on its London board.

The directors of the London & North Eastern Railway have appointed Mr. C. H. Newton as Divisional General Manager for the Southern Area of the system, in succession to Mr. G. F. Thurston, who is retiring under the age limit at the end of the year. Mr. Newton has been Chief Accountant of the company since 1928. He joined the Great Western Railway in September, 1897, obtaining experience in various sections of the Chief Accountant's office, including charge of the Electric Light and Hotels & Refreshment Rooms Department accounts. For some time he also held the position of principal clerk in the book-keeper's section. He transferred to the Great Eastern Railway on October 1, 1916, as Assistant to the Comptroller, becoming Assistant Accountant on November 1, 1919, and on May 1, 1922, he was appointed Chief Accountant. Consequent upon the formation of the L.N.E.R. on January 1, 1923, Mr. Newton was appointed Assistant Accountant of the new group; he succeeded the late Mr. C. L. Edwards as Chief Accountant in 1928. While with the Great Western Railway he was certificated as proficient in signalling and railway working, and played a leading part in the formation of the Great Western Railway Accountants' Office Students' Society, of which he was secretary for many years. Mr. Newton is the author of a volume on railway accountancy entitled "Railway Accounts," and is a Fellow of the Institute of Certified Public Accountants. He has also contributed articles upon railway accounts, office appliances, &c., to The Railway Gazette and other journals.

Elliott] *[& Fry*

Mr. C. H. Newton,

Appointed Divisional General Manager, Southern Area, L.N.E.R.

Indian Railway Staff Changes

Mr. R. W. Taylor has been appointed to officiate as Deputy Chief Engineer, E.B.R., as from September 28.

Mr. A. F. Harvey, on return from leave, resumed duty as officiating Agent, E.B.R., on October 9. Mr. E. L. Manley was appointed to officiate as Chief Engineer as from October 12.

Mr. F. R. Morgan has been appointed to officiate as Chief Engineer, N.W.R., as from October 21.

Mr. H. J. Darling has been appointed to officiate as Chief Electrical Engineer, E.I.R., as from October 15.

Mr. J. Mackinnon, officiating Chief Engineer, N.W.R., has reverted to his substantive appointment of Deputy Agent, as from October 21.

Mr. D. F. Woods has been appointed Chief Accounts Officer, N.W.R., as from October 21.

Lt.-Colonel J. P. S. Greig, R.E., has been appointed Commandant, Railway Training Centre, Longmoor Camp, Hants, in succession to Colonel L. Manton, D.S.O., O.B.E., as from April 1 last.

Mr. A. W. Allen, sometime Mineral Manager, L.M.S.R., whose death we recorded in our issue of October 11, left estate valued at £17,207 (£14,527 net).

Mr. P. Goddard, Assistant Traffic Manager, Central Argentine Railway, sailed for England on leave on October 31.

Mr. W. M. Codrington, M.C., a Director of the Cordoba Central Railway and other South American companies, arrived in Buenos Aires on October 22 on a business visit.

XUM

Supplementary Reserve Transportation Units, R.E., Annual Training, 1935

(See news article on page 981)

Construction wharf at Cranmer Pond

Mechanical excavator at Hollywater

Bridge construction at Hollywater

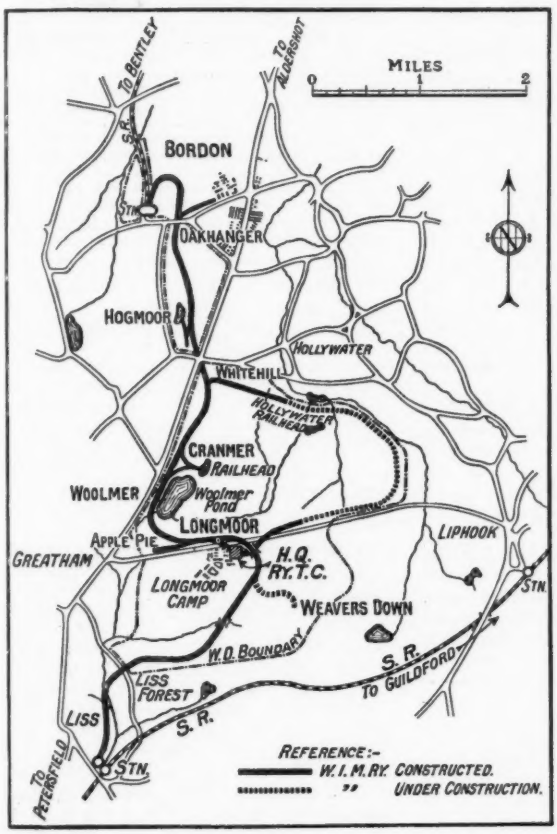
Loading artillery horses at Bordon station

Supplementary Reserve Transportation Units, R.E.

Annual Training, 1935

All the Supplementary Reserve Transportation Units, R.E., underwent their annual training at Longmoor Camp, Hants., between May and September, 1935. Each company passed a fortnight in camp, spending approximately one week of this on technical training—construction and operation of military railways—and the remainder on military training.

Each of the two operating companies took over the operation of the Woolmer Instructional Military Railway for two days, during which an operating exercise was staged, reproducing as far as possible difficulties that might be experienced under active service conditions. The Docks and Stores Companies each carried out a practical exercise, as well as a theoretical exercise on paper. The three construction companies continued their previous year's work on the Hollywater branch, and pushed the railway further into Woolmer Forest. They also started work on the construction of a landing wharf in Cranmer Pond. In addition, every company carried out some elementary fieldworks.



Map of the Woolmer Instructional Military Railway

Inspections were made during the summer by the Quarter-Master General to the Forces; the Director of Movements and Quartering; the Chief Engineer, Aldershot Command; and the Assistant Director of Transportation.

Among the railway directors and officers who visited Longmoor during annual camps were:—Col. Sir Herbert Walker, K.C.B., T.D. (General Manager, Southern Railway), Hon. Colonel, Transportation Units R.E. (S.R.); Lt.-Col. Gilbert S. Szlumper, C.B.E., T.D. (Assistant General Manager, Southern Railway); Lt.-Col. R. Carpmael, O.B.E. (Chief Engineer, G.W.R.); Lt.-Col. F. T. Bowler (G.W.R.), late O.C., 151st Coy., R.E. (S.R.); Major A. S. Quartermaine, M.C. (G.W.R.); Rt.-Hon. Lord Burghley, M.P. (Director, L.N.E.R.); Colonel V. M. Barrington-Ward, D.S.O. (L.N.E.R.); Col. H. H. Mauldin (L.N.E.R.); Major C. M. Jenkin-Jones (L.N.E.R.); Mr. A. W. Fraser (L.N.E.R.); Mr. J. Miller (L.N.E.R.).

The weather was distinctly damp for the first fortnight during which the operating companies were at Longmoor, but the remainder of the summer gave no cause for complaint. It was fortunate, however, that the camp ended before the great storm swept across England in mid-September. During each camp period regimental sports were held, and all proved most enjoyable events.

Units attending camp were as follow :—

May 23 to June 6	H.Q. Operating Group. Commanding Officer: Brevet Colonel W. E. Blakey, M.M. 153rd (L.N.E.) Railway Operating Company. Commanding Officer: Major H. F. Sanderson, R.E. (S.R.). 154th (G.W.) Railway Operating Company. Commanding Officer: Major K. L. Yorath, R.E. (S.R.).
June 13 to June 27	H.Q. Docks Group. Commanding Officer: Lt.-Col. H. S. Cole, R.E. (S.R.). 157th (L.N.E.) Railway Docks Company. Commanding Officer: Major J. R. Sadler, R.E. (S.R.).
July 2 to July 16	152nd (G.W.) Railway Construction Company. Commanding Officer: Major F. Holland, R.E. (S.R.).
July 18 to Aug. 1	150th (L.N.E.) Railway Construction Company. Commanding Officer: Major J. Scott, M.C., R.E. (S.R.).
Aug. 7 to Aug. 21	155th (L.M.S.) Railway Workshop Company. Commanding Officer: Major and Bvt. Lt.-Col. J. V. Denning, M.C., R.E. (S.R.).
Aug. 23 to Sept. 5	H.Q. Railway Stores Group. Commanding Officer: Lt.-Col. H. A. Short, M.C., R.E. (S.R.). 156th (S.R.) Stores Company. Commanding Officer: Major A. B. Chester, R.E. (S.R.). 151st (G.W.) Railway Construction Company. Commanding Officer: Major E. C. Cookson, R.E. (S.R.).

Also attended Camp at Longmoor :—

Aug. 7 to Aug. 21	No. 2 Company L. of C. Signals (S.R.), (L.M.S.R.) Commanding Officer: Major R Tandy, R.C. of Signals (S.R.).

NEW CURE FOR MALARIA.—The *British Industrial News*, the organ of the Empire Trade League, contains a brief article headed as above, and claiming to be an account of a simple but successful treatment. As so many railwaymen have to live all the year round in malarial regions—without the chance of getting away to the better climates enjoyed by (other) Government and military staff—they may welcome news of any cure or preventive, such as described in the extracts from the article given below. The treatment as well as being simple is claimed to render the patient immune from further malarial attacks for life. The only drugs used are specially prepared from eucalyptus and copper sulphate. In mild cases, and as a preventive against fever, they are taken internally, but in severe cases the eucalyptus can also be injected.

The copper sulphate breaks up the fever while the eucalyptus gives stamina to the blood, which finally produces immunity. These specially produced drugs are not expensive and they have to be taken only for a period of a month to six weeks. Belgrade, in Jugoslavia, is a city where malaria rages. Some years ago the public health authorities in that city adopted the treatment detailed above, with the result that the inhabitants are practically free from the seasonal malarial epidemics so prevalent in former years.

The remedy is produced by Das Klinisch-Therapeutisches Institut, a clinic at Arlesheim, near Basle, in Switzerland, but there is a branch clinic at 10, Kent Terrace, Regent's Park Road, London, N.W.1, under Drs. Nunhofer and Lawson.

NEW RAILWAY BRIDGE IN RUSSIA.—A new reinforced concrete railway bridge over the Moscow-Volga canal at Khimka has just been completed. It is said to be the largest of its kind in the U.S.S.R., with an arch of 116 m. span.

XUM

Closing the Brill Branch

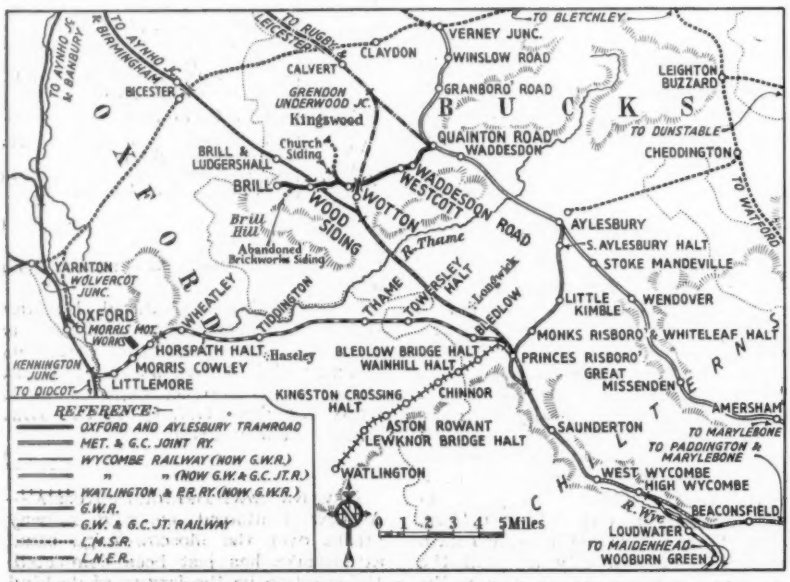
Never before in its 65 years of life has the Brill branch attracted such widespread interest—and probably never so numerous a passenger traffic—as on Saturday, November 30, when the last trains ran. Visitors journeyed from all parts of the country to make a final trip over the picturesque line; there were crowds at every station, lineside watchers, and enthusiasts in cars who accompanied the trains along the adjacent road. To the usual carriage a more modern Metropolitan Line vehicle was attached, but still more than half of the travellers were without seats.

This line, which for nearly 30 years has been worked by the Metropolitan & Great Central Joint Committee; was projected as long ago as 1855 by the Duke of Buckingham, one of the two great landowners who took in hand railway development in Buckinghamshire. It was intended as a branch from a proposed southward extension to Aylesbury of the Buckinghamshire Railway, but when that company passed into the hands of the L.N.W.R. in 1851 the Aylesbury extension was not proceeded with. The Duke, together with the other great landowner, Sir Harry Verney, then formed the Aylesbury & Buckingham Railway which secured its Act on August 6, 1860, and was opened on September 23, 1868, from Claydon (named Verney Junction in honour of Sir Harry) to Aylesbury.

Shortly afterwards the Duke of Buckingham proceeded to build a branch from Quainton Road to Brill in order to provide railway facilities for his tenants, and this is the line just closed. For the greater part of its length it was constructed on land owned by the Duke, and as to the other portion, at and near Quainton Road, on land owned by Winwood's Charity which was leased by the Duke. Work was begun in September, 1870, and no contractors were employed, except for a short time for laying the rails. Ballast was costly, having to be brought from Buckingham over the L.N.W.R. and Aylesbury & Buckingham lines, but nevertheless the cost of the railway, including sidings and two goods sheds (one 60 ft. by 25 ft. and one 25 ft. square), was rather less than £1,400 a mile exclusive of the value of the land.

The first section, from Quainton Road to Wotton, was brought into use with horse traction on April 1, 1871; the greater portion of the remainder opened for mineral and agricultural traffic in November; and the final quarter of a mile in the summer of 1872. It was not intended to carry passengers except persons accompanying cattle and workmen on the estate, and apparently only horse traction was proposed. The line was therefore laid with light-section bridge rails on longitudinal sleepers. So many requests for passenger accommodation were made, however, that a carriage was borrowed and placed in service in January, 1872. In this month a queer single-cylinder locomotive was obtained from Aveling & Porter of Rochester, and a generally similar engine followed in June of the same year. One of these locomotives is shown on a mixed train in an illustration on page 978. The working of the line was conducted at first by the firm of Chaplin & Horne, and the maintenance by the Duke of Buckingham.

Arrangements were made as from December 1, 1872, by which goods and parcels could be booked through from the Aylesbury and Buckingham Railway to places on the Wotton Tramway, including collection and delivery to adjacent villages. Brill and Wotton, for example, were served by daily deliveries, but other points had to be satisfied with twice or four times weekly. Apparently passengers were never booked through, as the volume of traffic in the independent days did not justify the necessary Clearing House arrangements.



Sketch map showing the relation of the Oxford & Aylesbury to other railways in Buckinghamshire

AYLESBURY & BUCKINGHAM RAILWAY,
AND
WOTTON TRAMWAY.

Arrangements have been made by which **GOODS** and **PARCELS** can be Booked through, between **AYLESBURY** and the undermentioned Places in **WOTTON TRAMWAY** District, on and after 1st December next, (including collection or delivery,) at the following Rates, viz.—

Ale and Porter	6*d.* per Cwt.
Groceries, in Mixed Packages	6*d.* "
Hardware	6*d.* "
Haberdashery and General Drapery	7½*d.* "
Earthenware, in Casks and Crates	6*d.* "
Leather	6*d.* "
Iron and General Ironmongery	6*d.* "
Wines and Spirits, in Casks and Cases	6*d.* "
Ditto, in Hampers	7½*d.* "
Ditto, in Jars or Bottles *(protected by basketwork)*	7½*d.* "
Ditto *(protected by basketwork)* if in over 4-gall. size	9*d.* "

	Under 14lbs.	Above 14lbs. and until more by weight
Single Parcels or Packages	6*d. each.*	8*d. each.*

DELIVERIES MADE AS FOLLOWS:

Brill and Wotton	*Daily.*
Boarstall, Oakley, & Little London	*Wednesdays & Saturdays.*
Ham Green, Kingswood, Grendon, and Edgcott	*Tuesdays, Wednesdays, Fridays, and Saturdays.*
Dorton, Ashendon, and Pollicott	*Wednesdays & Saturdays.*
Ludgershall and Piddington	*Mondays and Thursdays.*

☞ *Any further particulars can be obtained at the Offices of the Aylesbury and Buckingham Railway, Aylesbury; or any of the Offices on the Wotton Tramway.*

Aylesbury, 12th November, 1872.

DE FRAINE, PRINTER, "BUCKS HERALD" OFFICES, AYLESBURY.

An early through-booking announcement

The Wotton Tramway remained in its primitive state until Sir Edward Watkin launched his plan for linking the various railways under his control into a through line of communication from Lancashire to the Continent. In 1881, he secured Parliamentary authority to link Aylesbury with the Metropolitan Railway at Rickmansworth, a line opened for traffic on September 1, 1892. By this time the Metropolitan Railway had absorbed the Aylesbury & Buckingham Railway as from July 1, 1891, and thus become possessed of a through line from the Metropolis to Verney Junction, while the Bill for the London extension of the Manchester, Sheffield and Lincolnshire Railway (afterwards the G.C.R.) was before Parliament and actually received the Royal Assent in 1893.

With these schemes in the air the Wotton Tramway was apparently to become an important branch off a main line railway and its development was immediately taken into consideration. On August 20, 1883, Parliament incor-

porated the Oxford, Aylesbury and Metropolitan Junction Railway Company, with powers to build a 17½-mile railway from a station at Oxford to Quainton Road. This railway would presumably have absorbed the Wotton Tramway, although as the latter was not a statutory body, it was not mentioned in the Act. The new company was unable to raise a sufficient portion of its authorised capital of £300,000 to begin work. When the five years allowed for completion had nearly expired the company promoted a further Bill which received the Royal Assent in 1888, as the Oxford and Aylesbury Tramroad Act. This authorised the abandonment of the proposed railway; the change of name of the company to the Oxford & Aylesbury Tramroad Company; and the substitution of an 11 mile tramroad from Oxford to the Wotton Tramway at Brill. An agreement, dated July 17, 1888, scheduled to this Act, provided for the company to rent or buy the Wotton Tramway.

The Duke of Buckingham died on March 26, 1889, and his nephew, Mr. Gore-Langton, became Earl Temple in succession to him by special remainder. The rails and rolling stock of the Wotton Tramway became the property of Earl Temple. For some years nothing more was done by the Oxford & Aylesbury Tramroad Company beyond the securing of a further Act in 1892, extending until August 7, 1894, the time for completing the works. Electric traction was now envisaged for the tramway and protective clauses for the Postmaster-General were inserted.

Eventually, on October 15, 1894, the Oxford & Aylesbury Tramroad Company took over the working of the line, paying an agreed rent to the freeholders. It bought a certain amount of rolling stock, but never raised sufficient monies to acquire the freehold. In anticipation of the change the Oxford and Aylesbury directors had entered into a contract on the previous February 14 for the reinstatement of the line, and despite some delay due to the difficulty of obtaining gravel ballast instead of burnt clay, the works had been completed during the summer and inspected by Major-General C. S. Hutchinson, R.E., of the Board of Trade. The line had been re-laid with 50 lb. flat-bottom rails spiked to transverse sleepers. Certain sections were laid with chaired rails, and on these, notably at Waddesdon Road, rails may still be seen bearing the name of Krupp, of Essen. General Hutchinson's report stated that there were four level crossings of public roads for which there appeared to be no statutory sanction, but they had been approved by the Buckinghamshire County Council, subject to the stipulation that the normal position of the gates should be across the tramroad and not across the highway.

The new rolling stock included two locomotives built by Manning, Wardle & Company, Boyne Engine Works, Leeds. No. 1, built in 1876, was named *Huddersfield*, and No. 2, built in 1894, was named *Brill*. When *Huddersfield* was withdrawn her place was taken by a similar locomotive, built in 1899, named *Wotton*. All were 0-6-0 saddle tanks with inside cylinders 12 in. in diameter with a stroke of 17 in. The wheels were 3 ft. in diameter, the total wheelbase was 10 ft. 9 in., and the weight in working order about 18 tons.

Towards the end of the century negotiations were begun for the working of the line by the Metropolitan Railway, and the latter took it over on December 1, 1899, on the terms of a letter dated November 27 of that year from Mr. John Bell, then General Manager of the Metropolitan Railway, to the late Earl Temple. Provision was made for the Metropolitan Railway Company to purchase the line, but this was never carried out and the tramroad has since been worked under the terms of that letter. On April 2, 1906, the Metropolitan and Great Central Joint Committee assumed control of the tramroad, but it was not until June 11, 1913, that the agreement was finally sealed between the Metropolitan Railway and the G.C.R.

The joint line built by the Great Western & Great Central Joint Committee under authority of an Act of 1899, which was opened on November 20, 1905, largely nullified the value of the tramroad, as it crossed over the latter and provided a station at Wotton with direct access to both Paddington and Marylebone. Actually the section between Ashendon junction and Grendon Underwood became exclusive G.C.R. property from the date of opening, although authorised and built under the joint Act. Furthermore, in 1910 the G.W.R. opened its Ashendon-Aynho line as part of its new short cut to Birmingham. Mineral traffic began on April 4, and passenger traffic on July 1, 1910. This line crossed under the tramway, and it provided a station called Brill and Ludgershall, but near to the latter point and farther from the village of Brill than the tramroad terminus.

Recently the four Brill branch trains daily—usually mixed—included a first class Metropolitan eight-wheeler of 1879 from the former steam-operated Inner Circle line. As only one class was provided, this carriage had the novelty of certain of its compartment doors being lettered "First" inside and "3" outside. Nos. 23 and 41, two Beyer Peacock inclined-cylinder 4-4-0 tank engines of 1866 type, also from the Inner Circle, worked the line on alternate weeks, running to and from Neasden every Monday. These engines are not quite identical, as No. 23, the first of the Metropolitan Line stock to appear with "London Transport" on its tank sides, retains its condensing pipes, while No. 41 has had them removed.

The Oxford & Aylesbury Tramroad Company still exists and is at present controlled by the Trustees of the late Earl Temple's Estate. The rights of working the tramroad reverted to this company on December 1, but it is unlikely that any passenger service will again be provided.

WOTTON TRAMWAY.

His Grace the Duke of Buckingham and Chandos, Proprietor.

A TRAIN will leave BRILL STATION for QUAINTON at 6.55 a.m and 2.20 p.m.; and will leave QUAINTON for BRILL about 9.10 a m. and 4.20 p.m.

THE RUNNING WILL BE AS UNDER:—

	A.M.	P.M.
Leave Brill	at 6.55	2.20
,, Wood Siding	7.9	2.33
,, Church Siding	7.21	2.46
,, Wotton	7.31	2.55
,, Wescott	7.56	3.25
,, Waddesdon Road	8.20	3.40
Arrive at Quainton	8.33	3.55

	A.M	P.M
Leave Quainton	at 9.10	4.20
,, Waddesdon Road	9.33	4.41
,, Wescott	9.45	4.53
,, Wotton	10.10	5.15
,, Church Siding	10.16	5.21
,, Wood Siding	10.38	5.35
Arrive at Brill	10.55	5.55

These times will be adhered to as far as possible, but the running may be delayed, especially on the return journey, by late arrivals of the Trains at Quainton, or from other causes.

R. A. JONES, *Manager.*

Brill, November 1st, 1887.

DE FRAINE, PRINTER, "BUCKS HERALD" OFFICE, AYLESBURY

An early timetable showing an average speed of about 4 m.p.h.

P.L.M. Poster Advertising.—The P.L.M. Railway has produced another very attractive and timely series of posters for advertising in this country during the winter months the attractions of Southern France. Of outstanding merit in colour and composition is the poster for the P.L.M. road services from Avignon to the centres of Roman and Med'æval life, in which impressions of ancient architecture and sculpture are grouped with a masterly sense of form and colour against a sky of the warm blue tint that is a keynote of P.L.M. advertising of its southern territories.

Of the remaining posters in the new series, two are persuasive enticements to winter at the seaside resorts of Bandol and Sainte-Maxime, both distinguished by the unerring manner in which the artists have indulged a love of colour without crudeness or incongruity.

The Southern Railway Company is co-operating in publicity for the Côte d'Azur resorts by the display of a Riviera poster of its own by Rojan. The other P.L.M. posters show scenes at French winter sports resorts. Among them are two splendid ski-ing pictures by Paul Ordner and Georges Aron, which exhibit a high degree of skill in the difficult art of expressing speed and vitality through the medium of the poster.

XUM

Pickfords Limited Annual Dinner

Mr. W. J. Elliott, General Manager, Pickfords Limited and Hay's Wharf Cartage Co. Ltd., presided at the firm's annual dinner and dance which was held on Friday, November 29, at the King's Hall, Holborn Restaurant, London. Including visitors those present numbered well over 500, and were representative of every department of the firm's activities, including the provincial branches.

In addition to members of the staff of Pickfords Limited the vistors present included: Messrs. F. Bushrod, A. L. Castleman, H. T. Forth, A. E. Hammett, J. A. Kay, V. J. Kernan, E. F. E. Livesey, J. F. Lean, G. Matthews, D. A. W. Mackinnon, G. Marshall, Tom Potter, Lt.-Col. Gilbert Szlumper.

Lt.-Col. Gilbert S. Szlumper, Assistant General Manager, Southern Railway, proposed the toast of "The Firm," and read a message of welcome and appreciation of the work accomplished by the staff from the Chairman, Sir Josiah Stamp. Continuing, he referred to the fact that although Pickfords had been in existence for over 300 years, the firm appeared to be younger than ever, and mentioned some of its numerous activities, including the new depôt at Willow Walk. In conclusion he referred to the harmonious way in which all the heads of departments and their staffs had worked with the railway companies since the group railway companies and Pickfords had become partners in the world of transport.

Mr. W. J. Elliott, in replying, said that Colonel Szlumper had made a point of the fact that, notwithstanding its age, the firm kept absolutely up-to-date. He was quite right. Whilst a good deal of credit was due to the commercial departments, praise must be given to the service departments, the engineers, the body-works and last, but not least, the building department. Their engineers had given serious consideration to the new legislation for road transport, and advised the management of the necessary alterations, and then, after consultation with body-works, produced a vehicle which complied with the requirements of the law. These enabled the commercial department to maintain and develop their services. Another aspect of their progress during the year was their new depôts. Their architect had designed and constructed two new service depôts—one in Birmingham and one at Willow Walk; the latter being, in the opinion of all the people who had an opportunity of inspecting it, the latest thing in a modern transport depôt. Not only had Mr. Beaumont and his staff excelled themselves in the designing of this depôt, but the rapidity with which the actual construction was carried out was amazing.

Pickfords had also acquired a few more businesses during the past year. The largest of these was Venn & McPherson of Newport, Cardiff, and Swansea. On completion of the purchase, Mr. McPherson, the old Scottish Rugger player, and one of the proprietors, decided to stay with them and manage the business. The travel section of their business had also recently made history, by arranging and conducting 273 members of the British Medical Association in a tour round the world, which lasted 14 weeks and had resulted, much to the amazement of the management, in no complaints. In conclusion he expressed his appreciation of the support he had received from their business friends, some of whom he was pleased to see with them that evening, and whose support he hoped would continue for many years. To their friends among the staff of the four railways he would also say: "Thank you for your help and kindness throughout the past year."

Mr. R. H. Faro proposed the toast of "The Visitors," and Mr. E. A. Hilder replied. Mr. E. A. Knill proposed the toast of "The Chairman," and Mr. Elliott in a brief reply thanked the managers and staff for their wonderful support, and the enthusiasm they have shown in the development of the business. He hoped that they would continue in this enthusiastic manner, thus inspiring their staff, so that the older members of the firm could leave something big and better for the generation that followed them. In conclusion he expressed on the staff's behalf their thanks to Miss Weeden for the way in which her committee of one had organised the evening.

Great Western Railwaymen's Arts and Crafts Exhibition

A very successful exhibition of arts and crafts, the work of members of the staff of the Great Western Railway, and their families, was held at Paddington station from November 25 to November 30. Entries numbered between six and seven hundred, and were embraced in nearly a hundred separate classes, ranging from painting to model-making, and from sculpture to needlework and knitting. There was a total of 140 paintings, black and white drawings, and posters, mostly of original subjects, while nearly a hundred exhibits were included in the various classes of photography. The sections embracing those arts and crafts which are mainly the province of the ladies, *e.g.*, needlework, crochet, knitting, leatherwork, cane and raffia work, were particularly well supported. The exhibition was open to the public free of charge, and was visited by a large number of passengers.

The gold medal for the most meritorious work in the exhibition was duplicated, and jointly won by Mr. H. Cook (employed in the company's works at Swindon) for portraits in oils and black and white drawings, and Mr. A. Coad (a signalman at Penzance), for making a violin. These awards, together with other trophies and numerous medals, were presented by Sir Robert Horne (Chairman of the company) to the successful competitors on November 29. (See illustration on page 977). Sir Robert was supported by Sir W. James Thomas (a Director of the company, and President of the Great Western Railway Social and Educational Union) and a large number of the principal officers of the Great Western Railway.

Sir Robert expressed his pleasure at seeing such a large attendance. The numerous happy faces he took to belong not only to the winners, but to those who had on this occasion failed. That was evidence of the proper spirit in which to engage in competitive exhibitions. From his inspection of the work in the various classes, he had formed the view that the standard on the whole was higher than in previous years.

Referring to wax busts of Sir William James Thomas and himself, which had been entered by a youthful member of the staff, Sir Robert said that his own features were already sufficiently well known in Glasgow, but he noticed the newspapers of that city had been pleased to give prominence to this particular representation of them.

In presenting the awards, Sir Robert made his way from the platform to the body of the hall to hand a medal to a crippled lady competitor, a kindly action which met with the warm approval of his audience.

After the prizegiving, Mr. D. Williams, Chairman of the Executive Council, on behalf of the Social and Educational Union members, handed to Sir Robert Horne a leather blotting pad worked by one of the competitors. A vote of thanks to the Chairman, moved by Sir W. James Thomas, was accorded musical honours.

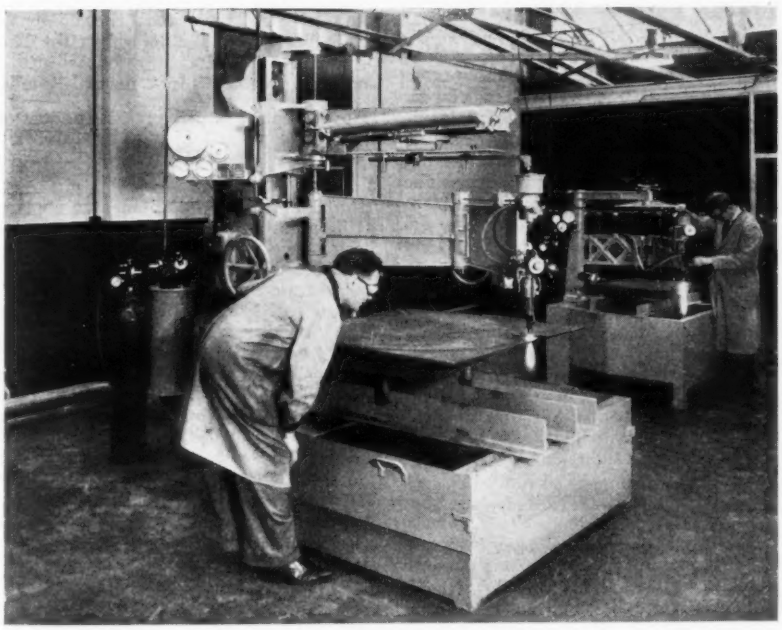
RAILWAY MANAGEMENT BY EMPLOYEES.—Following a dispute over wages and working conditions, the management of the United Railways of Yucatan, a system with over 500 route miles of line, has been turned over to the employees by the decision of the Yucatan Government, which owns more than 50 per cent. of the stock. The stockholders are at liberty to elect commissioners, but the members of the board and the administration will be elected by the workers, and will hold office until the Government decides whether the claims of the employees are justified.

XUM

An Up-to-Date Sales Technical Service

New premises of the British Oxygen Company at Cricklewood

The British Oxygen Co. Ltd. last Monday inaugurated new demonstration shops, instruction school, showroom and other services at its Cricklewood works. Most of these facilities have, of course, been available for many years, but their concentration at one centre conveniently reached from all parts of London, and in new and enlarged premises, is the result of the company's efforts to improve the service facilities available to all concerned in the oxy-acetylene industry.



The latest oxy-acetylene cutting machines at work on steel plates

The new premises of the Sales Technical Service Department comprises demonstration shops; a welding and cutting instruction school; a lecture theatre, exhibition showroom, and executive offices. The function of the Sales Technical Service Department is to provide a comprehensive before and after-sales service. In the main demonstration shop there is a complete range of the company's oxygen cutting machines, welding equipment, hand-cutters and equipment for leadburning, brazing, soldering, &c. In the smaller rooms adjoining are the metal spraying and arc-welding demonstration shops. Here, prospective customers may see a complete range of the company's equipment under actual working conditions and can more easily decide the type of apparatus or the process most suitable for their requirements. In the demonstration shop practical tests can be made on the actual job, to ascertain its practicability and to obtain a measure of the cost which would be involved.

The welding and cutting instruction school provides tuition for customers or their operators who have purchased equipment. But subsequent instruction can be given at any time, and it may happen that a firm using one or other of the processes takes on a different class of work and requires special instruction, which can be given in the school.

The lecture theatre is equipped for the showing of cinema films or lantern slides. Monthly illustrated lectures will be given here, and are open to customers, members of the company's staff, or in fact to anyone interested in the industry. Another use for the lecture theatre is to amplify instruction given in the welding and cutting school, by the showing of slides or films relative to the particular work on which they are engaged. The exhibition showroom contains, as far as possible, a complete exhibit of all the company's products, but more particularly is it intended to show specimens of work which have been done by means of the various processes. In the construction of the Cricklewood buildings all the heating radiators are of welded steel and all the pipes for the heating system have welded joints, connections, and branches. All sanitary and water service piping is either of welded copper or, where lead is used, oxy-acetylene leadburning was adopted as the means of jointing. Many of the ceilings are constructed of steel panels, and in the lecture theatre and showroom the steel ceiling has been metal sprayed with aluminium giving a permanent decorative effect not possible by other means. Incidentally, the furniture in the lecture room and in the offices is of welded steel construction.

While it is not a part of the Sales Technical Service Department, the work of the company's technical and Research Department, which has been situated at Cricklewood for many years, has an important bearing on the service available. In these laboratories all the company's raw materials and products such as welding rods, fluxes, purifying materials, carbide, are regularly tested in order to maintain the high standard required. Here also analyses are made, on behalf of customers, of special metals or other materials; in fact the Technical and Research Department is responsible for all forms of chemical or metallurgical control and research in connection with the industry. The most up-to-date apparatus has been installed.

Last Monday a party of press representatives was given the opportunity of inspecting the Cricklewood works. A film, prepared and projected by the company's own cinematograph operator, showed the scope of the activities of the firm, after which those present dispersed to inspect the various items and exhibits displayed. The building up of worn crossings by the oxy-acetylene process, which is now being developed on the L.N.E.R., may be singled out as one of the most notable of many interesting items. The members of the party were free to move about at will in the works, where the staff was prepared to give any explanations of equipment and methods.

LONDON TRANSPORT CHRISTMAS POSTERS.—The desirability of early shopping, and of travel outside the rush hours, is the theme of four Christmas posters now being displayed at London Transport stations. In two of them, a map of Underground lines serving the shopping areas is superimposed upon a background of lists of purchases, petitions to Father Christmas, and glimpses of catalogue pages. Both posters will act as a timely reminder to passengers of their seasonable obligations and commitments, while their cheerful colours may invest the business of choosing presents with a transitory glamour. "It is better to return early" is the slogan driven home by a third poster, a passing glance at which may persuade the very belated reveller that it is better still not to go out at all. The composition is modernistic, and like that of the fourth poster in the series, which again exhorts to early shopping, is based upon the pictorial association of ideas. Both uphold the tradition of experiment which the board has set itself in its poster advertising.

XUM

THE MONTH'S RAILWAY LAW

The Michaelmas Sittings

At the beginning of term the profession was grieved to hear that the Master of the Rolls (Lord Hanworth) was compelled to retire owing to illness. His place as Master of the Rolls was taken by Lord Wright, who has returned to the High Court after an interregnum in the House of Lords. The appointment of Lord Justice Maugham as a Law Lord made way for Sir Wilfred Greene in the Court of Appeal—an excellent appointment. Lord Justice Roche has also been promoted to the House of Lords, to be succeeded by Sir Leslie Scott, K.C., in the Court of Appeal.

Rating Decisions: Newcastle Railway Bridge

The high level bridge at Newcastle consists of two decks, of which the upper deck carries the railway, and the lower deck the roadway open to the public on payment of tolls. The Railway and Canal Commission recently had before it the question whether both decks were railway hereditaments and therefore entitled to the reduction in rating conferred by the Railways (Valuation for Rating) Act, 1930. By Section 1 (3) of that Act "any hereditament occupied for the purposes of the undertaking of a railway company" is a "railway hereditament." The Newcastle corporation contended that the roadway part of the bridge was merely a roadway and not to be regarded as a railway hereditament merely because it belonged to the railway company. The railway company argued that it was compelled by the Act of 1865 to maintain a double bridge of this kind, and that it was subsidiary to the undertaking, especially as it was entitled to charge tolls for it. "Undertaking" in the definition of the Act of 1930 includes "any subsidiary or ancillary undertaking carried on by the company, not being a road-transport, sea-transport or air-transport undertaking." Both the Railway Assessment Authority and (on appeal) the Railway & Canal Commission were of opinion that both parts of the bridge were railway hereditaments. It is, however, to be observed that each case must be decided on its own facts, and this decision illustrates only the manner in which questions of this kind will be decided by the court.

Cleethorpes Pier

In this case the same question arose with regard to a pier and gardens built at Cleethorpes under the Pier and Harbours Confirmation Act, 1867, which were afterwards acquired by the London & North Eastern Railway Company. When the pier was first constructed, boats used to touch there and land passengers. But the water had since receded and the pier was now used only for the gardens and other recreative purposes. The gardens were on the top of the sea wall which the railway had built to protect its line.

The gardens were thus not necessary for the railway undertaking, and did not assist the conduct of the railway. The statute, however, authorised the railway company to occupy both the gardens and the pier, and the Railway and Canal Commission again affirmed the rating authority and held that the pier and gardens were part of a railway hereditament.

Luggage Rack Danger

Clarke v. Southern Railway Company. (*The Times*, October 20.)

The dangers of putting anything more than light luggage on the rack were illustrated in this case. The plaintiff, a building supervisor, was travelling by train on the Southern Railway from Waterloo station to Woking, when the train gave a violent jolt and a suitcase was flung from the luggage rack opposite him, striking him on the head and causing injuries. The railway company denied negligence and pleaded that the suitcase was placed there by its owner, another passenger, in a dangerous or insecure position. The passenger was joined with the company as defendant, but Mr. Justice Swift dismissed him from the action, holding that there was no evidence of negligence on his part. Judgment was entered against the company for £2,100 and costs. 'It is very difficult to say that the engine driver has acted "negligently" in pulling up sharply in a case like this, but as his action was presumably the direct cause of the fall of the suitcase, the result is not surprising.

Limited Carriers' Licences

Great Western Railway Company v. *Licensing Authority for W. Midland Area.* (*The Times*, October 30.)

The distinction between the A and B Licences under the Road and Rail Traffic Act, 1933, is interesting. The A licence is the public carriers' licence, granted where the applicant's business is other than that of a carrier of goods: but where the B licence is an authority to use vehicles for carriage of goods, conditions may be attached to the licence under the Act (Sect. 8, sub-sec. 3) that the vehicles shall only be so used in a specified district or between specified places. Any person applying for a licence is required (Sect. 5, sub-sec. 1) to state particulars of the district or place where the authorised vehicles will *normally* be run for hire for the purpose of carrying goods.

In the above case a house furnishing company applied for a B licence for vehicles in Birmingham, Wolverhampton, Sutton and Hagley, the business being described as "furniture removing and delivery." The respondents granted the applicants a B licence for the carriage of furniture "any distance," and the railway company objected to this on the ground that the licensing authority in so doing was exceeding its powers. The Divisional Court ruled in favour of the railway company, but this was reversed in the Appeal Court and in the House of Lords. The important point is that the assumption of the Act according to this decision is that both A and B licences should be unrestricted in area.

The licences are granted for a year only, and if it is found that the area of the "normal use" has been exceeded, the authority may refuse the licence or limit it to a prescribed area upon a subsequent application. The decision gives a wide latitude to the licensing authority as to the meaning of "normal user" in this connection, and it certainly leaves the holder of a B licence in a state of doubt how far and when he may enter into a contract outside his "normal" area.

Damages for Shortened Expectation of Life

Rose v. *Ford.* (*The Times*, October 15.)

In *Flint* v. *Lovell* (1935) 1 K.B. 354, the Court of Appeal held that a plaintiff who had been injured through negligence was entitled to recover damages for the fact that his normal expectation of life had been materially shortened. Lord Justice Roche doubted the correctness of this decision chiefly on the ground that it would be hard to avoid the danger of giving a plaintiff damages for the same thing twice over. In *Rose* v. *Ford* (supra) the action was brought not by the injured party but by her parents, she having died within a few days of the accident as the result of the amputation of her leg, which became necessary owing to the accident. Had Miss Rose been killed instantly in the accident, no right of action would have vested in her, but only in her dependents, under Lord Campbell's Act. Did the fact that she survived for four days vest in her representatives a right of action for damages in respect of her shortened expectation of life as in *Flint* v. *Lovell*?

The matter arose owing to the Law Reform (Miscellaneous Provisions) Act, 1934, which provides that any cause of action subsisting on death shall survive for the benefit of the estate of the deceased. The Court of Appeal thought that the principle in *Flint* v. *Lovell* was not to be extended beyond the actual decision, which applied only to a living person. As Lord Justice Greene (the new Lord Justice) observed "The Act of 1934 does not create new causes of action; it would not be correct to say that she had at the moment of death any cause of action vested in her in which she could claim damages for her own death, and her administrator could not be in a better position." Perhaps the dissenting judgment of Mr. Justice Roche in *Flint* v. *Lovell* will some day receive greater weight in the House of Lords. "To allow such a claim," he said "would give to the shortening of life an efficacy which is denied to its extinction, and to death in the future an efficacy which is denied to death on the instant."

XUM

RAILWAY AND OTHER MEETINGS

Madras and Southern Mahratta Railway Co. Ltd.

The 84th ordinary general meeting of the Madras and Southern Mahratta Railway Co. Ltd. was held at the company's offices, 25, Buckingham Palace Road, London, S.W.1, on December 4, Brigadier-General Sir Charles L. Magniac, C.M.G., C.B.E. (Chairman and Managing Director) presiding.

The Secretary (Mr. G. W. V. De Rhé Philipe, O.B.E.) read the notice convening the meeting and the auditors' report.

Moving the adoption of the report and accounts, the Chairman said that the company's capital expenditure was again low, totalling just short of £100,000, or Rs. 13.32 lakhs, of which rolling stock accounted for Rs. 1.56 lakhs, and way and works for Rs. 13.69 lakhs, less Rs. 1.93 lakhs on stores suspense account. The Government restrictions on capital outlay had permitted only the more urgent works to receive approval. Turning to the gross earnings, they found that, in common with most of the Indian railways, a set-back had been suffered compared with the previous year, in this case of some 25 lakhs of rupees on the entire system, equal to about 3 per cent. The main cause of the decline was the greatly reduced traffic in groundnuts and seeds. An analysis of goods earnings showed that the traffic carried under these heads amounted to approximately 20 per cent. over a period of six years, ending in 1933-34, but this had dropped to only 14 per cent. in 1934-35. The low selling prices of groundnuts during 1933 and the early part of 1934 had disappointed the cultivators, who reduced the area under cultivation, and also, owing to an unfavourable monsoon, the out-turn per acre was below normal.

Coaching traffic always exhibited a correspondence with the goods earnings, because when prices of staple commodities ruled high, the cultivator set aside some spare cash for travelling by rail to local fairs and for visiting holy places, as well as for extended business. Lately, the cultivator had little spare cash.

Coaching earnings had also continued to suffer from road motor competition, and although some action was being taken by local governments to introduce a more efficient control over bus services, this did not go far enough. Railways were an Imperial and not a provincial concern, with the result that local governments did not make railway interests their own, but earmarked monies allotted to them by the Central Government for the improvement of existing roads and conversion of isolated roads into competitive through routes, in preference to opening up undeveloped tracts and connecting these with existing railways. To attract traffic to the railway, the company had lately introduced diesel railcars on the Coconada sections, and these were proving very popular.

Referring to an increase in working expenses, which had also reduced the net earnings, the Chairman announced that the surplus profits for the past year came to £185,535, which was a decrease of nearly £50,000 compared with the previous year. Having paid an interim dividend of 4½ per cent. last July, the directors proposed for the shareholders' approval a final distribution on January 1 next at a similar rate, thus making 9 per cent. for the year, which was one-half per cent. less than in 1933-34. To enable this final dividend to be provided, however, the sum of £50,000 would be withdrawn from the dividend equalisation fund, leaving the fund at £150,000 for use in subsequent years. The reserve fund would remain at £400,000, and the balance carried forward in the stockholders' revenue account would be about £34,500, compared with £48,700 last year. Prospects for the current year, ending on March 31 next, were not promising, since unsettled trade conditions had resulted in a continuous fall in receipts, averaging almost Rs. 1½ lakhs a week. The company's agent reported that the gross receipts of its own and State lines showed a fall of Rs. 32 lakhs, and the company's share of net earnings a decrease of Rs. 7·44 lakhs for the half year. Comparing this year's earnings with the temporary high return of last year, the comparative figures for the remainder of 1935-36 should give better results, though the earnings subsequent to September would not be sufficient to make up the fall in the first half of the year.

Concluding, the Chairman said everything possible was being done by the company's agent and staff, both executive and subordinate, to reduce expenses and encourage and foster traffic.

The report and accounts were unanimously adopted, after which the Chairman proposed: "That for the half-year ending December 31, 1935, a dividend of £2 15s. per cent., in addition to the guaranteed interest of £1 15s. per cent., to be received from the Government, or £4 10s. per cent. in all, be paid on the company's capital stock on January 1 next to all ordinary stockholders on the register on December 15."

Lt.-Col. Bonham-Carter seconded, and the resolution was carried.

Col. A. F. Hoskin then moved that the thanks of the stockholders be accorded to Mr. H. N. Colam, the company's Agent in India, to the heads of departments and the staff in India, and to the Chairman and Board of Directors and the Secretary and staff in London.

The motion was seconded by Mr. Brannan and carried with acclamation, after which the meeting concluded with a vote of thanks to the Chairman for presiding.

Argentine North Eastern Railway Co. Ltd.

The 47th ordinary general meeting was held on November 22 at River Plate House, Finsbury Circus, E.C., Sir Follett Holt, K.B.E. (Chairman of the company), presiding.

The Chairman, in moving the adoption of the report and accounts, said that converting pesos into sterling at the par of exchange the profit realised from the operation of the railway during the past financial year was £120,765, an increase of £19,772 over the previous twelve months. Exchange, however, played havoc with earnings and the company had had to provide for a realised loss on actual remittances of £33,327 and a further £14,183 for other exchange differences, which reduced the operating profit to £73,255, or an improvement in the year of £12,379. As the operating profit had not reached the limit laid down in the Presidential award, the wage reductions accepted in January, 1933, would still remain in force. It would be necessary to request the trustees to consent to a continuation of the interest moratorium on the B debentures and debenture stock until December, 1936. Payment of interest on the A debentures and debenture stock had been made regularly to date, but he could not say at the moment whether it would be possible to meet the interest charge on January 1 next. They would endeavour to do so, for they believed they were on the road to recovery, but confidence for the time being in Argentine investments had been lost, and securing additional funds might prove impossible.

The report was adopted.

P.L.M. Fruit and Vegetable Services.—The P.L.M. Railway has published a timetable folder of express freight services from Marseilles offering special facilities for North African growers of fruit and early vegetables. Apart from the through trains from Marseille-Arenc to Paris-Bercy which convey produce for *Les Halles* (the Parisian Covent Garden), there are special departures at 6.15 p.m. (only in the season) for all other destinations except those on the lines to Nice and Sète, and at 8.45 p.m. for Lyons, Saint Etienne, and points beyond Paris on the Nord and Etat systems, with connections to London. A similar timetable of express services for flower traffic from the Riviera was referred to in our issue of December 28, 1934.

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RAILWAY AND OTHER REPORTS

Uruguay Northern Railway.—Gross receipts for the year ended June 30 last in Uruguayan currency were $92,361, against $92,922 for the previous year, but expenses rose from $98,933 to $101,621, and the loss on working from $6,013 to $9 260. Exact comparisons in sterling are not possible, as the conversion from currency into sterling is now at the "controlled free" rate of exchange instead of the "official" rate as formerly. Goods traffic showed little change, but there was a welcome improvement in passenger traffic, due mainly to the new scale of fares. The board has appropriated £2,000 from net revenue towards meeting the loss from irregularities recently discovered in the collection of freight charges.

Midland Uruguay Railway.—For the year ended June 30, 1935, gross receipts in Uruguayan currency amounted to $844,391, working expenses to $766,557, and net receipts to $77,834, comparing with $751,158, $672,981, and $78,117 respectively in the previous year. Since February 1, 1935, currency has been converted into sterling at the "controlled free" rate in place of the "official" rate hitherto used. At the end of the year under review the official exchange rate for the Uruguayan dollar was 38⅞d., and the controlled free rate 21¾d. Goods traffic receipts improved by $28,000, and passenger receipts by $17,574, or 14½ per cent. A sum of £2,000 has been appropriated from general reserve towards meeting the loss caused by recently-discovered irregularities in the collection of freight charges.

North Western of Uruguay Railway.—In the accounts for the year ended June 30 last Uruguayan currency has been converted into sterling at the "controlled free" rate of exchange in place of the "official" rate hitherto used. Owing to this alteration an effective comparison cannot be made with the figures of the previous year, except receipts and expenses in local currency. At June 30, 1935, the "official" rate was $6·17 to the £ (38⅞d.) and the "controlled free" rate was $11·03 to the £ (21¾d.). Gross receipts amounted to $234,488 (against $244,891 in 1933-34), and working expenses to $256,116 (against $232,713), so that there was an operating loss for the year of $21,628 (against a profit of $12,178). After crediting investment income and charging debenture interest, &c., the debit balance carried forward is raised from £32,246 to £48,514. The company's workshops at Salto have been closed down, and repair work will in future be centralised in the Midland Uruguay shops at Paysandu. This will represent an appreciable economy and increased efficiency. Since the closing of the accounts in Uruguay serious irregularities have been discovered in the collection of freight charges due from the Government and other authorities. Towards meeting this loss the board has debited net revenue account with £2,000.

Indian Standard Wagon Co. Ltd.—This company, under the managing agency of Burn & Co. Ltd., earned a profit of Rs. 2,24,807 during the year ended March 31, 1935. With the amount brought forward from the previous year, a sum of Rs. 3,13,444 was available for distribution. After the payment of interest on preference shares, a dividend of 8 per cent. on ordinary shares was declared and a sum of Rs. 97,839 carried forward. The dividend of 8 per cent. actually represents a return of 2 per cent. to the original shareholders. The board of directors' report states that the works were not fully employed during the year 1934-35. For the current year, the company has received orders for the supply of 1,186 wagons. Unfortunately, the actual placing of the order was delayed and manufacture has only just commenced. The directors observe that a portion of the railway requirements for wagons has been ordered from abroad.

PARLIAMENTARY NOTES

The State Guarantee for the Railways

In reference to the recent announcement that the Government proposes to offer a guarantee on £30,000,000 to be raised by loan by the main line railway companies for the purpose of new works and improvements, the following passage occurred in the King's Speech at the opening of the present Parliamentary session on December 3:—

"A Bill will be introduced to authorise the guarantee by the State of a loan to be raised for the purpose of enabling the railway companies to carry out special developments which will add to transport facilities and to the convenience of travellers."

In the House of Commons debate which followed on the motion for an address to the King thanking him for his speech, Mr. W. Wakefield, Unionist member for Swindon, who moved the motion, referred among other things to the prospective railway developments. In that regard, he said he was conscious of the very great compliment paid to the young rising industrial town of Swindon. It was much more than a North Wiltshire industrial town. It was the nerve centre of that great transport undertaking representative of all that was best in British industrial life which had this year been celebrating the centenary of its existence. His constituents would hear with particular pleasure that part of the gracious Speech which announced the guarantee by the State of a loan to be raised for the purpose of enabling the railway companies to carry out special developments. Communications were the arteries of the body of industry, and as such must be elastic and ready for adaptation to the ever-changing needs of time. The efficient and economic distribution of the products of nature and mankind deserved the most pressing attention. It would, therefore, be to the general advantage, and in particular to the advantage of those who were still seeking employment, that the railway companies should have at the earliest possible moment authority to proceed with their new schemes of development.

Mr. Baldwin, the Prime Minister, speaking later in the discussion on many topics, referred to the Parliamentary business which the Government hoped to get through before Christmas. Among other things, he said that it was very important to get the money resolution and all stages of the Bill to implement the agreement with the main-line railway companies for granting financial facilities for their special programme of work. He did not think that this was a matter which would arouse much controversy in the House.

The Financial Resolution

The following is the text of the money resolution which will be moved on behalf of the Government, in the House of Commons probably next week:—

"Railways (Agreement) [Money],—That, with a view to enabling effect to be given to an agreement made on November 13, 1935, between the Treasury, the Great Western Railway Company, the London Midland and Scottish Railway Company, the London and North Eastern Railway Company, and the Southern Railway Company, a copy whereof was laid before this House on December 3, 1935, it is expedient—(a) to authorise the Treasury to guarantee the payment of the principal and interest of securities to be issued by the company to be formed in pursuance of Clause 3 of the said agreement: Provided that the amount of the principal of the securities to be so guaranteed shall not in the aggregate exceed an amount sufficient to raise twenty-six million five hundred thousand pounds; (b) to authorise the issue out of the Consolidated Fund of any sums required for fulfilling the said guarantee and the payment into the Exchequer of any monies received by way of repayment of any sums so issued; (c) to exempt the said agreement and other agreements mentioned in paragraph (b) of Clause 2 of the said agreement from stamp duty; (d) to make certain provisions ancillary to the matters aforesaid."

The resolution when adopted will be the preliminary to the necessary Parliamentary Bill.

NOTES AND NEWS

Thousandth Run of Cheltenham Flyer.—The G.W.R. Cheltenham Flyer, the fastest train in Great Britain, made its thousandth run yesterday. It covers the 77·3 miles from Swindon to Paddington in 65 min., an average start to stop speed of 71·4 m.p.h.

Modern Developments of Railway Signalling.—A paper with the above title was read by Major Peter at the Institution of Electrical Engineers last night. Major Peter dealt with his subject in two periods—post-war to grouping, and from grouping to the present day—and showed how the foundations of later developments were laid in the earlier period. Centralised traffic control and the control panel locking frame were among the features described in detail.

Christmas and New Year Gift Tickets.—Tickets of all descriptions for journeys beginning at any station will be issued in advance through all booking and enquiry offices of the main-line railways this Christmas, and will be available for the outward journey between December 7, 1935, and January 4, 1936. If desired, the issuing company will forward the ticket to a specified address, and greeting cards to accompany them are being produced. A scheme of this kind was inaugurated by the L.M.S.R. last year, and referred to in our issue of December 14, 1934.

Monument Subway Opened.—The new pedestrian subway beneath the junction of King William Street, Cannon Street, and Gracechurch Street, which also gives access to the Monument underground station of London Transport, was opened on Monday last, December 2, by Sir Percy Vincent, Lord Mayor of London, assisted by Mr. L. Hore-Belisha, Minister of Transport, and Lord Ashfield, Chairman of the London Passenger Transport Board. This subway was built at a gross cost of £45,000; the work was carried out by the L.P.T.B. as agent for the City Corporation in view of the complicated engineering work resulting from the subway being immediately above the Inner Circle railway. In addition, London Transport made a financial contribution towards the scheme.

Treasury Agreement with the Railways.—A Government memorandum has been issued dealing with the proposed financial resolution (set out in Parliamentary Notes in this issue) authorising the introduction of the Bill which will empower the Treasury to guarantee principal and interest on a loan of £26,500,000 for main line railway works. The total cost of these works is estimated at £29,500,000, of which £3,000,000 will be found by the companies from their own resources. The agreement between the Treasury and the companies provides that the works shall be completed by January 1, 1941, or within such further period as the Minister of Transport may allow. The money is to be raised by a finance company, which will be formed with a nominal share capital to raise and lend to the railway companies sums not exceeding £26,500,000. In this amount the respective shares will be: L.M.S.R., $\frac{8}{53}$rds, or £9,000,000; L.N.E.R. and Southern, each $\frac{9}{53}$rds, or £6,000,000; and Great Western $\frac{7}{53}$rds, or £5,500,000. The finance company will be formed on lines similar to those of the company concerned with the £35,000,000 London suburban transport scheme.

Railway Transportation Progress.—An unusually comprehensive popular account of modern railway operation and enterprise was given by Mr. H. H. Mauldin, Superintendent (Eastern Section), Southern Area, L.N.E.R., in a paper with the above title read before the Norwich Traffic Club on Wednesday. Mr. Mauldin compared the railway industry with a living organism, in that it could not stand still. The trend of its development, moreover, was influenced by outside stimulus—in this case often economic. New demands and conditions of recent years had led the companies to make rapid strides in the adoption of measures designed to improve their working, retain their business, and attract new traffic. These progressive tendencies were in evidence in present-day methods of permanent way maintenance, signalling, acceleration of services, new facilities for passengers, and new methods of dealing with goods. Mr. Mauldin gave representative examples and explanations of all the foregoing developments, and concluded with a reference to railway, air and sea services.

G.W.R. Dramatic Society.—The Great Western Railway (London) Dramatic Society presented "Orders are Orders" before large and enthusiastic audiences at the Park Theatre, Hanwell, on November 29 and 30, and at the Fortune Theatre, Drury Lane, on December 3. It was an experiment for the society to stage a play at a West End theatre, but the excellent patronage accorded to the show at the Fortune by G.W.R. officers and others fully justified the venture, which will, it is hoped, be repeated in future years. "Orders are Orders," a rollicking military diversion in three acts, by Ian Hay and Anthony Armstrong, is a proved success both as a play and film, and its strong flavour of comedy was very much to the taste of the Great Western Railway players and their audiences. The fact of the cast being a large one presented no difficulty to the society, as it is fortunate in having a large number of capable and enthusiastic members available for the performance of its chosen plays. The show was a thoroughly bright and entertaining one. Where all the players did so well there is no need to particularise, but a special word of commendation is due to the society's experienced producer, Mr. Percy Grumbridge, as leader of his versatile team, and also to Mr. H. R. H. Prior for the overture and *entr'acte* music contributed by the West London orchestra under his direction. The Great Western Railway Dramatic Society "graduated" in comedy, and, after having sampled thrillers and straight plays in recent years, has returned, in "Orders are Orders," to its first love. Possibly a lighthearted rather than a sombre outlook is characteristic of the Great Western line!

Railways at the Catering Exhibition.—The L.N.E.R. has been awarded the special silver cup and cash prize of £10 10s. for its exhibit in Class 11 of the Cold Buffet competition of the Salon Culinaire International de Londres, held in connection with the Hotel, Restaurant and Catering Exhibition at Olympia, which closes today (see page 859 of our issue of November 22). The following awards to the four entrants from the company's Royal Station Hotel at Newcastle have so far been announced: Mr. G. Gamlin (bronze medal: cold egg dish); Mr. H. Henderson (certificates of merit: decorated ham and salad dish; and works in pastillage, icing sugar, and meringue); and Mr. A. Jench (certificate of merit: petits fours, gateau, patisseries). Views of the L.M.S.R. Midland Hotel at Morecambe and an architect's drawing of the new Queen's Hotel at Leeds are among those selected to represent current architectural and decorative practice.

L.N.E.R. Musical Society.—The first concert of the season was held on November 29 in the Hamilton Hall, Liverpool Street Hotel, with Lady Wilson, wife of Sir Murrough J. Wilson, K.B.E., Deputy Chairman of the L.N.E.R., in the chair. Amongst those present were:—

Mr. Wm. Whitelaw, Chairman, L.N.E.R.; Sir Murrough J. Wilson, Deputy Chairman, L.N.E.R.; Sir Chas. A. Batho, Director, L.N.E.R.; Messrs. E. L. Hawkins; A. W. Headley; W. H. Hyde; R. J. M. Inglis; Jas. McLaren; Col. H. H. Mauldin; Messrs. L. H. K. Neil; R. R. Pettit; J. E. Ryan; J. E. Sharpe; Percy Syder; G. F. Thurston; Capt. E. F. Warren; Messrs. Alex. Wilson; and E. P. Yeo; and Capt. F. H. Thomas.

The music was provided by the society's full symphony orchestra and the London section of the male voice choir, with Hetty Bolton, solo pianist, and Robert Easton, bass. The conductor was Mr. Leslie Woodgate and the accompanists Messrs. S. E. Macy and Eric Whitcomb. On taking her seat, Lady Wilson was presented by Mr. Percy Syder, on behalf of the committee, with a silver and ivory mallet, suitably inscribed. Mr. Whitelaw proposed a vote of thanks to Lady Wilson for presiding. In reply, Lady Wilson thanked the committee for the opportunity given her of presiding on the occasion and for the souvenir mallet, and added her appreciation of the

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music. Outstanding features of the programme were the Rachmaninoff Piano Concerto No. 2 in C minor, with Miss Hetty Bolton performing brilliantly at the solo instrument, supported, in a highly efficient manner, by the orchestra; the first performance of a part song, "I dare not ask a kiss," composed by Mr. A. A. Ashman, the secretary of the choir in the Cambridge section of the society, to the words of Robert Herrick, and assisted in this item by eight members of the Cambridge choir; and the first performance of a characteristic light piece of music entitled "Souvenir," written and conducted by Mr. Frederick Stock.

Railway Rates Tribunal.—As will be seen from the legal notice on page 995, the Railway Rates Tribunal will sit on Tuesdays, January 21, February 18, March 17, April 21, May 19, June 16, July 14, October 13, November 10, and December 8, 1936, to hear applications as to the granting of new or the reduction of existing exceptional rates. The Court will also sit on Tuesdays, January 28, April 28, July 21, and October 20, 1936, to hear applications to determine any questions as to classification of merchandise; applications as to the reductions to be made from the standard charges where damageable merchandise is carried under owner's risk conditions; and applications as to rebates under the Railway Freight Rebates Scheme.

Road Accidents.—The Ministry of Transport return for the week ended November 30 of persons killed or injured in road accidents is as follows. The figures in brackets are those for the corresponding period of last year:—

	Killed, including deaths resulting from previous accidents		Injured	
England ...	136	(124)	3,951	(3,552)
Wales	4	(6)	172	(135)
Scotland ...	6	(10)	332	(334)
	146	(140)	4,455	(4,021)

The total fatalities for the previous week were 164, as compared with 146 for the corresponding period of last year.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 48th Week			Totals to Date		
	1935	1934	Inc. or Dec.	1935	1934	Inc. or Dec.
L.M.S.R. (6,923 mls.)	£	£	£	£	£	£
Passenger-train traffic...	380,000	384,000	– 4,000	23,196,000	22,820,000	+ 376,000
Merchandise, &c. ...	486,000	472,000	+ 14,000	21,694,000	21,495,000	+ 199,000
Coal and coke ...	291,000	267,000	+ 24,000	11,093,000	10,951,000	+ 142,000
Goods-train traffic ...	777,000	739,000	+ 38,000	32,787,000	32,446,000	+ 341,000
Total receipts	1,157,000	1,123,000	+ 34,000	55,983,000	55,266,000	+ 717,000
L.N.E.R. (6,336 mls.)						
Passenger-train traffic...	265,000	259,000	+ 6,000	15,178,000	14,858,000	+ 320,000
Merchandise, &c. ...	385,000	374,000	+ 11,000	15,148,000	15,198,000	– 50,000
Coal and coke ...	281,000	259,000	+ 22,000	10,808,000	10,923,000	– 115,000
Goods-train traffic ...	666,000	633,000	+ 33,000	25,956,000	26,121,000	– 165,000
Total receipts	931,000	892,000	+ 39,000	41,134,000	40,979,000	+ 155,000
G.W.R. (3,749¼ mls.)						
Passenger-train traffic...	162,000	171,000	– 9,000	9,823,000	9,703,000	+ 120,000
Merchandise, &c. ...	191,000	189,000	+ 2,000	8,746,000	8,654,000	+ 92,000
Coal and Coke ...	121,000	108,000	+ 13,000	4,782,000	4,788,000	– 6,000
Goods-train traffic ...	312,000	297,000	+ 15,000	13,528,000	13,442,000	+ 86,000
Total receipts	474,000	468,000	+ 6,000	23,351,000	23,145,000	+ 206,000
S.R. (2,171 mls.)						
Passenger-train traffic...	243,000	241,000	+ 2,000	14,392,000	13,993,000	+ 399,000
Merchandise, &c. ...	70,000	71,500	– 1,500	2,950,000	3,123,000	– 173,000
Coal and coke ...	43,000	42,500	+ 500	1,440,000	1,478,000	– 38,000
Goods-train traffic ...	113,000	114,000	– 1,000	4,390,000	4,601,000	– 211,000
Total receipts	356,000	355,000	+ 1,000	18,782,000	18,594,000	+ 188,000
Liverpool Overhead ... (6½ mls.)	1,097	1,048	+ 49	56,531	54,576	+ 1,955
Mersey (4½ mls.) ...	4,161	4,204	– 43	193,140	195,641	– 2,501
*London Passenger Transport Board ...	544,600	557,000	– 12,400	11,966,500	11,761,600	+ 204,900
IRELAND						
Belfast & C.D. pass. (80 mls.)	1,737	1,748	– 11	121,659	120,355	+ 1,304
,, ,, goods	510	585	– 75	24,610	24,896	– 286
,, ,, total	2,247	2,333	– 86	146,269	145,251	+ 1,018
Great Northern pass. (543 mls.)	7,300	7,650	– 350	504,050	480,750	+ 23,300
,, ,, goods	14,300	11,450	+ 2,850	455,750	425,450	+ 30,300
,, ,, total	21,600	19,100	+ 2,500	959,800	906,200	+ 53,600
Great Southern pass. (2,124 mls.)	17,621	18,101	– 480	1,175,880	1,148,911	+ 26,969
,, ,, goods	46,290	42,280	+ 4,010	1,722,845	1,609,141	+ 113,704
,, ,, total	63,911	60,381	+ 3,530	2,898,725	2,758,052	+ 140,673

* 22nd week, the receipts for which include those undertakings not absorbed by the L.P.T.B. in the corresponding period last year; last year's figures are, however, adjusted for comparative purposes

British and Irish Railways Stocks and Shares

Stocks	Highest 1934	Lowest 1934	Prices Dec. 4, 1935	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	66½	48½	51	+1½
5% Con. Prefce. ...	118	109	118½	+1
5% Red.Pref.(1950)	115	107	110½	—
4% Deb.	117	105	114	+1
4½% Deb. ...	119	109	115½	+1
4½% Deb. ...	129½	115¼	124½	+1
5% Deb.	135	126¼	136½	—
2½% Deb.... ...	75	64	72	—
5% Rt. Charge ...	134 7/16	123¼	134½	+2
5% Cons. Guar. ...	132¾	121¾	132½	+2
L.M.S.R.				
Ord.	30½	19½	18	+½
4% Prefce. (1923)	64¼	41	54½	+2
4% Prefce. ...	87	69½	84	+2
5% Red.Pref.(1955)	107	92½	103½*	—
4% Deb.	114 1/8	100½	109*	–1
5% Red.Deb.(1952)	118 11/16	111¼	112½	—
4% Guar.... ...	106½	96¾	105	+1½
L.N.E.R.				
5% Pref. Ord. ...	24¾	13½	10	—
Def. Ord.	11½	6⅞	5⅝	+⅛
4% First Prefce....	76	59½	59½	+2
4% Second Prefce.	47	25½	21½	+1
5% Red.Pref.(1955)	94½	80	79½	+2
4% First Guar. ...	104	92	100½	+1
4% Second Guar.	97⅞	86½	92	+1
3% Deb.	90	74½	84*	—
4% Deb.	114	99¼	108*	–½
5% Red.Deb.(1947)	117	108	111½	+2
4½% Sinking Fund Red. Deb.	111¼	105¼	109*	–1
SOUTHERN				
Pref. Ord.... ...	90	63⅛	87	+3
Def. Ord. ...	32⅝	19	22½	+1½
5% Prefce. ...	118 3/16	107½	118	+½
5% Red.Pref.(1964)	115¾	107½	113½	—
5% Guar. Prefce.	132	120¾	132½	+2
5% Red.Guar.Pref. (1957)	119½	113	115½	—
4% Deb.... ...	116½	103¼	113*	+1
5% Deb.	134	124 15/16	133½*	–1
4% Red. Deb. 1962–67	113 11/16	105 9/16	111½*	—
BELFAST & C.D.				
Ord.	6	5	9	—
FORTH BRIDGE				
4% Deb.	110	100	105½	—
4% Guar. ...	110	100	104½	—
G. NORTHERN (IRELAND)				
Ord.	9¾	4 15/16	15¼	—
G. SOUTHERN (IRELAND)				
Ord.	25	12½	40	+3
Prefce.	21½	13 15/16	48	+1
Guar.	48	39	85⅛	+⅛
Deb.	67	59	82½	–3¼
L.P.T.B.				
4½% "A" ...	126	115	121½*	–1
5% "A" ...	135½	124½	132½*	—
4½% "T.F.A." ...	113½	107½	109*	–1
5% "B" ...	131¾	118	128½*	—
"C"	97	73	109	+3
MERSEY				
Ord.	15¼	7	21	–2
4% Perp. Deb. ...	93½	82½	97½	+2
3% Perp. Deb. ...	66½	61½	76	+1
3% Perp. Prefce.	54	44½	59½	—

* ex dividend

CONTRACTS AND TENDERS

L.M.S.R. 1936 Programme

The L.M.S.R. announces the completion of the works and rolling stock programme for 1936, involving an expenditure of £8,500,000 on major replacements and improvements. This programme, which is quite distinct from the work to be undertaken under the proposed Government guaranteed loan, includes the provision of 133 locomotives, 111 locomotive boilers, 687 carriages, 9,485 wagons, 900 containers, and three steamers. In addition, the company will renew 600 miles of permanent way. The 133 locomotives will be built in the company's shops and 48 will be similar in type to the three-cylinder 4-6-0 "Jubilee" class tender locomotives. The scheme also includes 70 2-6-4 passenger tank engines, and 15 2-8-0 freight tender locomotives. About one million pounds is to be spent in providing 687 passenger coaches of the latest design, the bulk of the vehicles to be of the vestibuled and corridor type. The new freight wagons will range from the 12-ton standard to 30-ton bogie bolster rail and timber trucks. The 900 new containers will be designed to meet the requirements of particular industries, including perishable foodstuffs requiring insulation, and will increase the company's stock to 7,528. So far as road transport is concerned, the programme provides for over 300 motor vehicles. The expenditure on permanent way renewals will amount to one and a half million pounds, and will include the renewal of 600 miles of track. This together with smaller works, requires no less than 98,000 tons of British manufactured steel rails and 1,470,000 new sleepers. In addition 4,150 standards of crossing timbers will be required. This year, 450,000 sleepers and 3,620 standards of crossing timbers will be purchased from home and British Dominion markets. A huge amount of other material will also be required for use in connection with this work, including 5,600,000 wooden keys, and, in extension of recent policy, 845,000 steel keys, 2,100 tons of fishplates, 62,000 tons of chairs, 6,750 tons of chair screws, 450 tons of fishbolts, 523,000 tons of ballast, 3,025,000 felt chair pads and 10,200,000 wooden ferrules. During the year three new vessels will be built for the L.M.S.R. fleet; a cargo steamer for the Heysham-Belfast route, a passenger vessel for the Clyde, and a dredger for Fleetwood Harbour. Provision has also been made for a number of modernisation schemes at docks and hotels, in addition to the new hotel at Leeds.

The South Indian Railway Administration has placed the following orders to the inspection of Messrs. Robert White & Partners: Superheater Co. Ltd., 139 superheater elements; Greenwood & Batley Limited, one bolt, rivet and general forging machine; Kendall & Gent Limited, one bolt screwing machine; Morgan Crucible Co. Ltd., one tilting furnace.

Railway Construction in the U.S.A.

The Chicago, Burlington & Quincey Railroad has ordered, at a cost of some $1,600,000, 39,000 tons of steel for use next year for permanent way, bridges, and freight cars. Plans are also being made by the Atchison, Topeka & Santa Fé for the renewal of its present light rail track with 112-lb. rails and the reballasting of the line in order that accelerated services may be put into operation. This work, says Reuters, calls for the expenditure of about $2,000,000, of which about $1,800,000 will be spent for new rails.

Miller & Co. Ltd. has received an order for 300 chilled cast-iron wheels for wagons, for the Entre Rios Railways.

Machine Tool Orders

The East Indian Railway Administration has placed orders for machine tools as follow:—

Alfred Herbert (India) Limited: One 55-in. universal oxygen cutting machine; one Kearns No. 3 surfacing, boring, milling, drilling, and tapping machine; one Herbert No. 23V and one Herbert No. 18V vertical milling machines.

Associated British Machine Tool Makers Limited: One belt-driven Richard's No. 2 size, model Kc2, slot-drilling and cotterway cutting machine; one Butler's special design No. 2 puncher-type slotting machine; one Parkinson No. 2T universal horizontal milling machine; two Parkinson's No. 3P horizontal milling machines; one Parkinson No. 1NA universal milling machine; and one Butler No. 3 48-in. planer.

A. C. Bottomley & Co.: One Swift gap bed lathe.

Heatly & Gresham Limited: One Muir vertical milling machine.

J. O'Hara, Murray & Co. (India) Ltd.: One Schiess Defries vertical boring mill, type 12 EK85.

The Indian Stores Department has placed orders for machine tools as follow:—

Craven Bros. (India) Ltd.: One electrically-driven boring machine.

Associated British Machine Tool Makers Limited: One milling machine; one combination turret lathe; one capstan lathe; and one spur and spiral gear planing machine.

J. Parkinson & Son Ltd. has received an order from the Central Uruguay Railway for one motor-driven No. 3T universal milling machine.

S. Osborne & Co. Ltd. has received orders from the Bengal-Nagpur Railway for approximately 300 carriage and wagon springs.

The Egyptian State Railways Administration has placed the following orders:—

P. & W. MacLellan Limited: Pick beaters (Ref. E.S.R. 1093, total price £304).

Tubes Limited: Steel tubes (Order No. 17.122, total price approx. £285).

Nicholson File Co. Ltd. (through Thos. Cook & Son Ltd.): Files and rasps (Ref. 309G3/3, total price £540 5s.).

William Jacks & Co.: Pig iron (Ref. 6.144, items 1 and 2, total price £1,865 6s.).

The Associated Equipment Co. Ltd. has received orders from railway and railway-associated road transport operators as follow: London Passenger Transport Board, two oil-engined Q type single-decked passenger vehicles, following the recent order for 200 oil-engined Regent double-decked vehicles; Cumberland Motor Services Limited, one oil-engined Regal; and Pickfords Limited, one Monarch goods vehicle.

J. Baker & Bessemer Limited has received an order from the Central Argentine Railway for 200 steel locomotive tyres.

Nasmyth Wilson & Co. Ltd. has received an order from the Madras & Southern Mahratta Railway for one locomotive boiler for metre gauge MS 4-6-0 type locomotive.

T. Firth & J. Brown Limited has received an order from the Central Argentine Railway for 180 steel axles for carriages and wagons.

The Great Western Railway has placed the following orders:—

Willoughby (Plymouth) Limited: Repairs to west outer leaf of entrance gates, Plymouth Docks.

Holiday & Greenwood Limited: Lengthening of platforms, alterations to staff messrooms and to straw stores, Smithfield Goods Depot.

J. T. Wade & Son: Supply and erection of automatic electric pumping plant, Stourbridge.

Burton Griffiths & Co. Ltd.: Three five-spindle Acme automatic screwing machines.

D. Etchells & Son Ltd.: One nut-making machine for Swindon Works.

Coventry Machine Tool Works Limited: Horizontal upsetting and forging machine for Swindon Works.

The Agent, North Western Railway of India, invites tenders, receivable by January 2, 1936, for the supply of two electrically-driven four-spindle automatic screw machines.

The Indian Stores Department is calling for tenders, to be presented in New Delhi by January 2, 1936, for the supply of 400 steel superheating flue tubes and 2,700 steel boiler tubes for locomotive boilers.

Soviet Orders in Great Britain

Orders placed in Great Britain by Soviet trading organisations during October of this year amounted to £891,316 as compared with £574,466 in October last year. In the first ten months of this year the value of the orders placed and purchases made shows only an increase of approximately 4 per cent. over the corresponding period in 1934—£8,653,844 as compared with £8,357,263. The following table shows the principal orders placed during the period under consideration for engineering and allied equipment and materials:—

	October, 1934	October, 1935	Jan.-Oct., 1934	Jan.-Oct., 1935
	£	£	£	£
Machinery and equipment ..	58,552	10,216	1,263,614	1,786,069
Steel and ferrous alloys ..	9,100	39,498	1,165,490	672,164
Non-ferrous metals ..	161,422	314,296	1,668,893	2,360,454
Rubber ..	131,427	159,302	2,299,592	900,973

There was an increase in the first ten months in the orders placed in this country for machinery and equipment by more than 40 per cent. The orders for steel and ferrous alloys have been reduced to approximately one half whilst those for non-ferrous metals have practically doubled. The purchases of rubber have dropped by nearly 70 per cent.

XUM

PARLIAMENTARY NOTICES

IN PARLIAMENT.
SESSION 1935-36.

London & North Eastern Railway (General Powers)

NOTICE IS HEREBY GIVEN that application has been made to Parliament in the present Session by the London and North Eastern Railway Company for an Act under the above name or short title intituled " A Bill to empower the London and North Eastern Railway Company to widen certain of their Railways to construct other Works in connection with their undertaking and to acquire Lands; to authorise financial arrangements with respect to certain works and facilities to be provided by the said Company under an Agreement with the Treasury; to raise additional capital; to dispose of or close the Grantham Canal; and for other purposes."

A notice containing a concise summary of the purposes of the intended Act has been or will be published in *The Times* newspaper of the 2nd and 9th December, 1935.

On and after the 4th day of December, 1935, a copy of the Bill may be inspected and copies thereof obtained at a price not exceeding six shillings for each copy at the undermentioned offices and at the Stationmaster's office at the following railway stations of the Company, viz., Cambridge, Ipswich, Lincoln, Nottingham (Victoria), York, Chelmsford and Chester (Liverpool Road).

AND NOTICE IS HEREBY ALSO GIVEN that on or before the 20th day of November, 1935, plans and sections relating to the said intended works and plans of all lands which may be taken or used compulsorily with a book of reference to such plans were deposited for public inspection as follows (that is to say):—

As regards works and lands in the County of Cambridge with the Clerk of the County Council of that County at his office at Cambridge; as regards works and lands in the County of West Suffolk with the Clerk of the County Council of that County at his office at Bury St. Edmunds; as regards works and lands in the Parts of Kesteven in the County of Lincoln with the Clerk of the County Council of that County at his office at Sleaford; as regards works and lands in the County of Nottingham with the Clerk of the County Council of that County at his office at Nottingham; as regards works and lands in the City and County Borough of Sheffield with the Town Clerk of that City at his office at Sheffield; as regards works and lands in the City and County Borough of York with the Town Clerk of that City at his office at York; as regards lands in the County of London with the Clerk of the County Council of that County at his office at the County Hall, Westminster Bridge, S.E.1; as regards lands in the County of Essex with the Clerk of the County Council of that County at his office at Chelmsford; as regards lands in the West Riding of the County of York with the Clerk of the County Council of that County at his office at Wakefield; as regards lands in the County of Chester with the Clerk of the County Council of that County at his office at Chester; and as regards lands in the County Borough of Ipswich with the Town Clerk of that Borough at his office at Ipswich.

And that copies of so much of the said plans sections and book of reference as relates to each of the several areas hereinafter mentioned in or through which the said intended works are proposed to be made or lands are situate were on or before the said twentieth day of November deposited for public inspection as follows (that is to say):—

As relates to any non-county or metropolitan borough with the Town Clerk of such borough at his office; as relates to any urban district (not being a borough) or to any rural district with the clerk of the district council of such district at his office; as relates to any parish having a parish council with the clerk of the parish council of such parish at his office, or if he have no office at his residence; and as relates to any parish comprised in a rural district and not having a parish council with the Chairman of the parish meeting of such parish at his residence.

Dated this 5th day of December, 1935.

I. BUCHANAN PRITCHARD,
King's Cross Station, N.1.
Chief Legal Adviser.
H. R. CRIPPS,
4, Cowley Street,
Westminster, S.W.1.
Chief Assistant Solicitor.
SHERWOOD & CO.,
22, Abingdon Street,
Westminster, S.W.1.
Parliamentary Agents.

IN PARLIAMENT.
SESSION 1935-36.

London & North Eastern Railway (London Transport)

NOTICE IS HEREBY GIVEN that application has been made to Parliament in the present Session by the London and North Eastern Railway Company for an Act under the above name or short title intituled " A Bill to empower the London and North Eastern Railway Company to widen certain of their Railways; to construct other works in connection with their undertaking and to acquire Lands; to revive the powers and extend the time for the completion of certain Railways; to raise money for or in connection with passenger transport services in the London Transport Area; and for other purposes."

A notice containing a concise summary of the purposes of the intended Act has been or will be published in *The Times* newspaper of the 2nd and 9th December, 1935.

On and after the 4th day of December, 1935, a copy of the Bill may be inspected and copies thereof obtained at a price not exceeding six shillings for each copy at the undermentioned offices and at the Stationmaster's office at the following railway stations of the Company, viz., Chelmsford, Tottenham and Hertford East.

AND NOTICE IS HEREBY ALSO GIVEN that on or before the 20th day of November, 1935, plans and sections relating to the said intended works and plans of all lands which may be taken or used compulsorily with a book of reference to such plans were deposited for public inspection as follows (that is to say):—

As regards works and lands in the County of London with the Clerk of the County Council of that County at his office at Westminster Bridge, S.E.1; as regards works and lands in the County of Essex with the Clerk of the County Council of that County at his office at Chelmsford; as regards works and lands in the County Borough of West Ham with the Town Clerk of that Borough at his office at West Ham; as regards lands in the County of Middlesex with the Clerk of the County Council of that County at his office at The Guildhall, Westminster, S.W.1; as regards lands in the County of Hertford with the Clerk of the County Council of that County at his office at Hertford; and as regards lands in the County Borough of East Ham with the Town Clerk of that Borough at his office at East Ham.

And that copies of so much of the said plans sections and book of reference as relates to each of the several areas hereinafter mentioned in or through which the said intended works are proposed to be made or lands are situate were on or before the said 20th day of November deposited for public inspection (that is to say):—

As relates to the City of London with the Town Clerk of that City at his office at The Guildhall, E.C.2; as relates to any non-county or metropolitan borough with the Town Clerk of such borough at his office; as relates to any urban district (not being a borough) or to any rural district with the Clerk of the district council of such district at his office; and as relates to the parish of Theydon Bois with the Clerk of the parish council of that parish at his residence.

Dated this 5th day of December, 1935.

I. BUCHANAN PRITCHARD,
King's Cross Station, N.1.
Chief Legal Adviser.
H. R. CRIPPS,
4, Cowley Street,
Westminster, S.W.1.
Chief Assistant Solicitor.
SHERWOOD & CO.,
22, Abingdon Street,
Westminster, S.W.1.
Parliamentary Agents.

SCOTTISH OFFICE.
NOVEMBER, 1935.
PRIVATE LEGISLATION PROCEDURE (SCOTLAND) ACTS, 1899 AND 1933.

London & North Eastern Railway (Provisional Order)

NOTICE IS HEREBY GIVEN that application by Petition under and in pursuance of the provisions of the Private Legislation Procedure (Scotland) Acts, 1899 and 1933, has been made to the Secretary of State in the month of November, 1935, by the London and North Eastern Railway Company for an Order entitled " (Draft) Provisional Order to empower the London and North Eastern Railway Company to acquire additional lands; to make provision as to the tolls and charges leviable by the said Company on the Edinburgh and Glasgow Union Canal; and for other purposes."

A Notice containing a concise summary of the purposes of the Order has been or will be published in *The Times, Scotsman*

and *Glasgow Herald* newspapers of the 2nd and 9th December, 1935.

AND NOTICE IS HEREBY FURTHER GIVEN that on or before the 20th day of November, 1935, plans of all the lands which may be taken or used compulsorily with a book of reference to such plans were deposited for public inspection as follows (that is to say):—

As regards lands in the County of East Lothian with the Sheriff Clerk of that County at his office at Haddington, as regards lands in the County of Midlothian with the Sheriff Clerk of that County at his office at Edinburgh, as regards lands in the County of Westlothian with the Sheriff Clerk of that County at his office at Linlithgow and as regards lands in the County of Dunbarton with the Sheriff Clerk of that County at his office at Dumbarton.

And that copies of so much of the said plans and book of reference as relates to each of the several areas hereinafter mentioned in which lands are situate were on or before the said 20th day of November deposited for public inspection as follows (that is to say):—

As relates to any burgh with the town clerk of such burgh at his office and as relates to any county district with the clerk of the district council of such district at his office.

Printed copies of the draft Order may on and after the fourth day of December, 1935, be inspected and copies obtained at a price not exceeding one shilling for each copy at the undermentioned offices and at the Stationmaster's office at the following railway stations of the Company, viz., Dunbar, Linlithgow and Craigendoran.

Dated this 5th day of December, 1935.

I. BUCHANAN PRITCHARD,
King's Cross Station,
London, N.1.
Chief Legal Adviser.

H. R. CRIPPS,
4, Cowley Street,
Westminster, S.W.1.
Chief Assistant Solicitor.

T. B. MAITLAND,
23, Waterloo Place,
Edinburgh.
Solicitor (Scotland).

SHERWOOD & CO.,
22, Abingdon Street,
Westminster, S.W.1.
Parliamentary Agents.

IN PARLIAMENT.
SESSION 1935-36.

London Midland & Scottish Railway

NOTICE IS HEREBY GIVEN that application has been made to Parliament in the 1935-36 Session by the London Midland & Scottish Railway Company (hereinafter referred to as "the Company") for leave to bring in a Bill under the above name or short title intituled "A Bill to empower the London Midland & Scottish Railway Company to construct works and to acquire lands; to authorise financial arrangements with respect to certain works and facilities to be provided by the said Company under an Agreement with the Treasury; to raise additional capital; and for other purposes."

A Notice containing a concise summary of the purposes of the Bill has been or will be published in full in *The Times* newspaper on the 3rd and 10th days of December, 1935.

On and after the 4th day of December, 1935, a copy of the Bill may be inspected and copies thereof obtained at a price not exceeding three shillings for each copy at the offices of Mr. W. O. Hickson, Divisional Solicitor, Hunts Bank, Manchester, and Messrs. Beale & Co., 12, Newhall Street, Birmingham, at the Stationmaster's office at the following railway stations of the Company, viz.:—Chester, Spon Lane, Oldbury and Bromford Lane, Tilbury, Flint, Abergele, and Alfreton and South Normanton, and also at the offices of the undermentioned Chief Legal Adviser and Parliamentary Agents.

And Notice is hereby further given that on or before the 20th day of November, 1935, plans and sections relating to the said works and plans of all lands which may be taken compulsorily with a book of reference to such plans were deposited for public inspection as follows (that is to say):—As regards the works and lands in the County of London with the Clerk of the County Council at his office at London, as regards the works in the County of Lancaster with the Clerk of the County Council at his office at Preston, as regards the works and lands in the County of Warwick with the Clerk of the County Council at his office at Warwick, as regards the lands in the County of Derby with the Clerk of the County Council at his office at Derby, as regards the lands in the County of Denbigh with the Clerk of the County Council at his office at Ruthin, and as regards the lands in the County of Flint with the Clerk of the County Council at his office at Mold. And that copies of so much of the said plans, sections and book of reference as relates to each of the several areas hereinafter mentioned in which the works and lands are situate were on or before the said 20th day of November, 1935, deposited as follows (that is to say):—As relates to any county borough or to any metropolitan or non-county borough with the Town Clerk of such borough at his office; as relates to any urban district not being a borough or to any rural district with the Clerk of the District Council of such district at his office; as relates to any parish comprised in a rural district with the Clerk of the Parish Council at his residence.

Dated this 4th day of December, 1935.

H. L. THORNHILL,
10, Great College Street,
Westminster, S.W.1.
Chief Legal Adviser.

BEALE & CO.,
16, Great George Street,
Westminster, S.W.1.
Parliamentary Agents.

Forthcoming Events

Dec. 6 (*Fri.*).—Institute of Transport (Leeds), at Town Hall, 6.30 p.m. "Commercial Aviation," by Mr. G. S. Walter.

Institute of Transport (Nottingham Graduate), at Guildhall, 7 p.m. "The Relationship between Competitive Methods of Transport," by Lt.-Col. F. Rayner, D.S.O.

Institution of Heating and Ventilating Engineers, at London School of Hygiene, Keppel Street, W.C.1, 7 p.m. "Some Notes on Humidity," by Mr. C. L. Burdick.

Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, 7 p.m. Informal Meeting.

L.N.E.R. (London) Lecture and Debating Society, at Dining Club, Liverpool Street Station, 5.15 p.m. "Liverpool Street—What we do and how we do it," by Mr. H. C. Calver.

Railway Club, at Royal Scottish Corporation Hall, Fetter Lane, London, E.C.4, 7.30 p.m. "How the L.B. & S.C.R. kept the Eastbourne Traffic," by the Rev. R. B. Fellows.

Railway Students' Association (Edinburgh), at Goold Hall, St. Andrew Square, 7.30 p.m. "Industry and Transport in North-East Scotland," by Mr. J. G. Singer.

Dec. 7 (*Sat.*).—Stephenson Locomotive Society (London), at Dining Club Room, King's Cross Station, L.N.E.R., 2.30 p.m. Annual General Meeting. Annual Dinner, at Manchester Hotel, Aldersgate Street, E.C.1, 6.30 p.m.

Dec. 9 (*Mon.*).—G.W.R. (Birmingham) Lecture and Debating Society, at Great Western Hotel, Snow Hill Station, 6.30 p.m. "The Working of the South Wales Docks," by Mr. I. E. Ford.

Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 5.30 p.m. "The Development of Town and Country Road Passenger Services," by Lt.-Col. A. W. C. Richardson, D.S.O.

Dec. 10 (*Tues.*).—Institute of Transport (Birmingham), at Queen's Hotel, 6 p.m. "The Institute Visit to Austria," by Mr. A. Witcomb Smith.

L.N.E.R. (Newcastle–Sunderland) Lecture and Debating Society, at Newcastle, 7 p.m. "British Trade and the Four Group Railways since 1923," by Mr. J. Hancock.

L.N.E.R. (York) Lecture and Debating Society, at Railway Inst., Queen Street, 7 p.m. "Traffic Operation on London Underground Railways," by Mr. G. Hally.

Permanent Way Institution (Sheffield), at Royal Victoria Hotel, 7 p.m. "A Few Observations on Permanent Way Work," by Mr. R. Ketteringham.

Travel and Industrial Development Association, at Caxton Hall, Caxton Street, London, S.W.1, 12 noon. Annual General Meeting.

Dec. 11 (*Wed.*).—British Railway Stockholders' Union Limited, at Central Hall, London, S.W.1, 11.15 a.m. Annual General Meeting.

Institution of Civil Engineers, Great George Street, London, S.W.1, 6 p.m. Informal Meeting.

L.N.E.R. (Darlington) Lecture and Debating Society, at North Road Inst., 7.30 p.m. "Military Railway Experiences," by Col. W. G. Tyrrell, D.S.O.

Permanent Way Institution (London), at Staff Dining Room, Waterloo Station (S.R.), 7 p.m. "The Geology of South-East England in Relation to Railways," by Mr. D. R. Bennett.

Royal Society of Arts, John Street, London, W.C.2, 8 p.m. "The Organisation of Transport with Special Reference to the L.P.T.B.," by Mr. Frank Pick.

Dec. 12 (*Thurs.*).—G.W.R. (London) Lecture and Debating Society, at General Meeting Room, Paddington Station, 5.45 p.m. "The Principles of Commerce," by Sir Francis Goodenough, C.B.E.

Institute of Metals (London), at Society of Motor Manufacturers, 83, Pall Mall, S.W.1, 7.30 p.m. "Die-Casting of Non-Ferrous Alloys," by Mr. N. Robertson.

Institution of Locomotive Engineers (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m. Informal Meeting.

Permanent Way Institution (Brighton), at Lecture Room, New England Street, 7 p.m. "Signalling and Block Working," by Mr. Rutherford.

Dec. 13 (*Fri.*).—Institute of Transport (Leeds Graduate), at City Transport Department, Swinegate, 7 p.m. "The Growth of the Leeds Municipal Transport System," by Mr. H. Lancaster.

Institute of Transport (Manchester–Liverpool), at Liverpool, 6.30 p.m. "Education in Transport," by Mr. W. Marks.

Institute of Transport (Newcastle), at Royal Station Hotel, 7.30 p.m. "Road Passenger Transport Topics," by Mr. F. Lythgoe.

Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, 6 p.m. "Damping Influences in Torsional Oscillation," by Mr. J. F. Shannon.

Railway Club, at Broad Street Station Restaurant, E.C.1. Annual Dinner.

XUM

LEGAL AND OFFICIAL NOTICES

In the Court of the Railway Rates Tribunal

Road and Rail Traffic Act, 1933. Agreed Charges.

NOTICE IS HEREBY GIVEN that Applications for the approval of Agreed Charges under the provisions of Section 37 of the Road and Rail Traffic Act, 1933, short particulars of which are set out in the Schedule hereto, have been lodged with the Railway Rates Tribunal.

The said Applications may be inspected at the Office of the Tribunal, Bush House, Aldwych, London, W.C.2, at any time during office hours and at the following places:—

LONDON: Railway Clearing House, 123, Seymour Street, N.W.1.
BIRMINGHAM: District Goods Manager's Office, Snow Hill, Great Western Railway.
CARDIFF: Divisional Superintendent's Office, Great Western Railway.
EXETER: Western Divisional Superintendent's Office, Southern Railway.
LEEDS: District Goods Manager's Office, Wellington Street, London & North Eastern Railway.
LEICESTER: District Goods and Passenger Manager's Office, London Midland & Scottish Railway.
MANCHESTER: District Goods Manager's Office, Hunt's Bank, London Midland & Scottish Railway.
SOUTHAMPTON: Southern Divisional Superintendent's Office, Southampton West, Southern Railway.
YORK: Goods Manager's Office, London & North Eastern Railway.
ABERDEEN: District Goods and Passenger Manager's Office, London Midland & Scottish Railway.
EDINBURGH: District Goods and Passenger Manager's Office, Waverley Station, London & North Eastern Railway.
GLASGOW: Commercial Manager's Office, Central Station, London Midland & Scottish Railway.

A copy of each Application lodged with the Tribunal can be obtained from Mr. G. Cole Deacon, Secretary, Rates and Charges Committee, 35, Parliament Street, Westminster, London, S.W.1, price 1s., post free.

Notices of objection by any parties entitled to object to the approval of any of the said Agreed Charges must state concisely the grounds of objection and must be filed at the office of the Registrar, Bush House, Aldwych, London, W.C.2, on or before the 27th day of December, 1935, and a copy thereof on or before the same day served on or sent by registered post to Mr. G. Cole Deacon, at the above address. A separate Notice must be filed and served in respect of each Application.

Each Notice filed must be on foolscap size paper and must be stamped with an adhesive fee stamp for 2s. 6d. (which can be purchased at the office of the Tribunal only). If sent by post for filing each Notice must be accompanied by a Postal Order for 2s. 6d. payable to the Registrar when a stamp will be affixed at the office. A Notice by a Representative Body of Traders must contain a statement of the facts upon which such Body claims to represent a substantial number of traders interested in, or likely to be affected by the decision on, the application.

Four additional copies of each Notice must be lodged with the original at the office of the Registrar.

T. J. D. ATKINSON,
Registrar.

2nd December, 1935.

Number of Application and Date of Lodgment	Parties to Agreement	Nature of Agreed Charge
1935. No. 367—Nov. 11, 1935	J. H. BOUNDS, 4, Whitworth Street, Manchester, and the Cheshire Lines Committee and the G.W., L. & N.E. and L.M. & S. Railway Cos.	Per package. Manufactured Cotton, Linen and Woollen Goods.
1935. No. 369—Nov. 29, 1935	BRAND & CO. LTD., Mayfair Works, Vauxhall, London, S.W.8, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per ton. Groceries, Preserves and Provisions, such as those included in Exceptional Rates Lists G, H, S and T other than Meat Meal, as defined in the General Classification of Merchandise; Confectionery; Essences and Extracts for Human Food; Wooden Display Cabinets; Advertising Matter; Empties returned to Suppliers.
1935. No. 370—Nov. 29, 1935	COOK, SON & CO. (ST. PAULS) LTD., 22, St. Paul's Churchyard, London, E.C.4, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per ton. Bedding, Cushions, Drapery, Millinery, Umbrellas; Mats and Matting, Oilcloth; Chairs (common folding); Empties returned to Suppliers.
1935. No. 371—Nov. 29, 1935	EVESON BROTHERS (1928) LTD., Monarch Works, Lye, and the G.W. and L.M. & S. Railway Cos.	Per ton. Holloware and Electric Wash Boilers.
1935. No. 372—Nov. 29, 1935	GERARD BROS. LTD., The Soap Works, Wilkinson Street, Nottingham, and the L. & N.E. and L.M. & S. Railway Cos.	Per ton. Soap; Bath Salts; Glycerine; Perfumery; Toilet Preparations; Articles for Advertisement and Gifts.
1935. No. 373—Nov. 29, 1935	JAMES GRISDALE & SONS, Station Road, Otley, Yorks, and the L. & N.E. and L.M. & S. Railway Cos. *Applicable also to traffic consigned by nine Associated or Subsidiary Companies.*	Per ton. Candles and Tapers; Soap.
1935. No. 374—Nov. 29, 1935	ARTHUR HARRISON & CO. LTD., Globe Mills, Victoria Road, Leeds, and the L. & N.E. and L.M. & S. Railway Cos.	Per ton. Cloth.
1935. No. 375—Nov. 29, 1935	H.P. SAUCE LIMITED, Aston Cross, Birmingham, 6, and the G.W. and L.M. & S. Railway Cos.	Per ton. Pickles, Sauces (except "Chow" sauce unpacked); Vinegar; Empties returned to Suppliers.
1935. No. 376—Nov. 29, 1935	J. LYONS & CO. LTD., Cadby Hall, Kensington, London, W.4, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per ton. Biscuits, Chocolate, Coffee, Coffee Extract, Cocoa, Cocoa Butter, Confectionery, Custard Powder, Jellies, Tea, Fancy Goods, Advertising Matter; Cleansing Materials, Condiments, Flavourings and other requisites for use in the Trader's Branches.
1935. No. 377—Nov. 29, 1935	S. NOTON LIMITED, Endurance Works, Blackhorse Lane, Walthamstow, E.17, and the G.W., L. & N.E. and L.M. & S. Railway Cos.	Per ton. Fibreboard Cases or Bags, Handbags or Holdalls.
1935. No. 378—Nov. 29, 1935	HIGGINS, EAGLE & CO. LTD., 4 and 6, Cannon Street, London, E.C.4, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per package. Clothing, Drapery, Gloves, Hosiery and Textiles.
1935. No. 379—Nov. 29, 1935	HIGHAM CAINE & CO. LTD. (HIGHCO STORES), 17, Chorlton Street, Manchester, and the Cheshire Lines Committee and the G.W., L. & N.E. and L.M. & S. Railway Cos.	Per package. Clothing, Drapery and General Stores Wares.
1935. No. 380—Nov. 29, 1935	J. PULLAR & SONS LTD., Perth, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos. and L.P.T.B. *Applicable also to traffic consigned by one Associated or Subsidiary Company.*	Per package. (i) Dyed and Cleaned Goods. (ii) Goods for Dyeing and Cleaning.
1935. No. 381—Nov. 29, 1935	H. SAMUEL LIMITED, Hunters Road Works, Hockley, Birmingham, 19, and the G.W. and L.M. & S. Railway Cos.	Per package. Chinaware, Clocks and Watches, Cutlery, Electro Plate, Fancy Goods, Glassware, Gold and Silverware, Jewellery, Musical Instruments, Umbrellas and Advertising Matter.
1935. No. 382—Nov. 29, 1935	BEATTIES BISCUITS LIMITED, Drumchapel, Glasgow, and the L. & N.E. Railway Co.	Per ton. Biscuits and Cakes; Empties returned to Suppliers.
1935. No. 383—Nov. 29, 1935	BOOTH'S DISTILLERIES LIMITED, 83, 84 and 85, Turnmill Street, London, E.C.1, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per ton. Wines and Spirits in casks, cases and jars and Advertising matter.
1935. No. 384—Nov. 29, 1935	BOOTH'S DISTILLERIES LIMITED, 83, 84 and 85, Turnmill Street, London, E.C.1, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos. and L.P.T.B.	Per ton. Empties returned to the Trader.
1935. No. 385—Nov. 29, 1935	J. A. CRABTREE & CO. LTD., Lincoln Works, Walsall, and the G.W. and L.M. & S. Railway Cos.	Per ton. Electrical Accessories and Fittings; Printed Matter; Empties returned to Suppliers.
1935. No. 386—Nov. 29, 1935	EDWARD CURRAN & CO. LTD., Hurman Street, Cardiff, and the G.W. Railway Co.	Per ton. Enamelled Holloware.
1935. No. 387—Nov. 29, 1935	THE ENFIELD HIGHWAY CO-OPERATIVE SOCIETY LIMITED, 112, Ordnance Road, Enfield Wash, and the L. & N.E. Railway Co.	Per ton. Butter, Cheese, Dried Fruits, Flour, Green Bacon, Oilcake, Soap, Meal, Soda, Sugar and Tinned Goods.
1935. No. 388—Nov. 29, 1935	THE GRE-SOLVENT COMPANY, Junction Works, Whitehall Road, Leeds, and the L. & N.E. and L.M. & S. Railway Cos.	Per ton. Soap, Cleansing Powder and Paste; Polishes; Enamels; Metallic Cement and Flux.
1935. No. 389—Nov. 29, 1935	THE IMPERIAL TOBACCO COMPANY (OF GREAT BRITAIN AND IRELAND) LTD., East Street, Bedminster, Bristol, and the L. & N.E. and L.M. & S. Railway Cos.	Per ton. Manufactured Tobacco and Cigarettes, Advertising Matter, and Empties returned to Suppliers.
1935. No. 390—Nov. 29, 1935	NORTH BRITISH RAYON LIMITED, 6, Clement's Inn, London, W.C.2, and the L. & N.E. Railway Co.	Per ton. Artificial Silk Yarn.
1935. No. 391—Nov. 29, 1935	PEARCE DUFF & CO. LTD., Spa Road, London, S.E.16, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per ton. Groceries and Preserves, such as those included in Exceptional Rates Lists G, H and S, as defined in the General Classification of Merchandise; Confectionery; Sulphate of Magnesia; Advertising Matter and Show Cards; Empties returned to Suppliers.

Legal and Official Notices—*continued*

Number of Application and Date of Lodgment	Parties to Agreement	Nature of Agreed Charge
1935. No. 392—Nov. 29, 1935	THE SUFFOLK IRON FOUNDRY (1920) LIMITED, Gipping Works, Stowmarket, and the L. & N.E. Railway Co.	Per ton. Mangles; Mincers; Machines, such as Lawn Mowing or Marking, Wringing; Sports Equipment, complete or in parts; Hardware and Flux.
1935. No. 393—Nov. 29, 1935	VALENTINE & SON LTD., Westfield Works, Dundee, and the L. & N.E. and L.M. & S. Railway Cos.	Per ton. Calendars; Pictures (framed); Printed Matter, Stationery; Fancy Goods; Empties returned to Suppliers.
1935. No. 394—Nov. 29, 1935	WEBER LIMITED, 268, 347 and 348, Central Markets, London, and the G.W., L. & N.E., L.M. & S. and Southern Railway Cos.	Per ton. Bacon and Hams; Canned Goods; Preserves; Provisions; Butter; Lard; Cheese, Tea; Empties returned to Suppliers.
1935. No. 395—Nov. 29, 1935	THE SHIELDS ICE & COLD STORAGE CO. LTD., North Shields, and the L. & N.E. Railway Co.	Per package. Preserved Food, Preserved Fruits, Cordials and Advertising Matter.
1935. No. 396—Nov. 29, 1935	VALENTINE & SONS LTD., Westfield Works, Dundee, and the L. & N.E. and L.M. & S. Railway Cos.	Per package. Calendars, Pictures (framed), Christmas Cards, Post Cards and Stationery.
1935. No. 397—Nov. 29, 1935	THE VICTORIA CREAMERY CO. LTD., Airdrie, and the L. & N.E. and L.M. & S. Railway Cos.	Per package. Bakers' Filling Cream, Confectionery for Cakes and Spice.
1935. No. 398—Nov. 29, 1935	THE WESSEX GLOVE CO. LTD., Yeovil, Somerset, and the G.W. and Southern Railway Cos.	Per package. Gloves.
1935. No. 399—Nov. 29, 1935	F. W. WOOLWORTH & CO. LTD., New Bond Street House, 1/5, New Bond Street, London, W.1, and the G.W., L. & N.E., L.M. & S., Southern and Mersey Railway Cos. and L.P.T.B.	Percentage on Purchase Price. All goods for sale or use at Trader's Stores, with certain exceptions.
1935. No. 400—Nov. 29, 1935	S. & J. WATTS & CO., Manchester, and the Cheshire Lines Committee and the G.W., L. & N.E. and L.M. & S. Railway Cos.	Per package. Clothing, Drapery and General Stores Wares.
1935. No. 401—Nov. 29, 1935	FAIRE BROS. & CO. LTD., Rutland Street, Leicester, and the L. & N.E. and L.M. & S. Railway Cos.	Per ton. Drapery articles, such as named in Exceptional Rates Lists C and D, as defined in the General Classification of Merchandise; Box Counters and Stiffeners; Cardboard and Leatherboard; Empties returned to Suppliers.

Railway Rates Tribunal

RAILWAYS ACT, 1921.
LOCAL GOVERNMENT ACT, 1929.

NEW EXCEPTIONAL RATES.
REDUCTION OF EXCEPTIONAL RATES.
CLASSIFICATION OF MERCHANDISE.
REDUCTIONS FOR OWNER'S RISK.
RAILWAY FREIGHT REBATES SCHEME.

NOTICE IS HEREBY GIVEN that the Court of the Railway Rates Tribunal will sit on the following dates:—

Tuesday, 21st January, 18th February, 17th March, 21st April, 19th May, 16th June, 14th July, 13th October, 10th November and 8th December, 1936, to hear:

Applications as to the granting of New or the reduction of existing Exceptional Rates for which the consent of the Tribunal is required,

and

Applications to the Tribunal for New Exceptional Rates or for the reduction of Exceptional Rates.

NOTICE IS FURTHER GIVEN that the Court will sit on the following dates:—

Tuesday, 28th January, 28th April, 21st July and 20th October, 1936, to hear:

Applications to determine any questions as to the alteration of the Classification of Merchandise, or the alteration of the Classification of any article, or the Classification of any article not at the time classified, or any question as to the Class in which any article is classified,

Applications as to the Reductions to be made from the Standard Charges where Damageable Merchandise is carried under Owner's Risk Conditions,

and

Applications to determine any question as to whether any Rebate is or was allowable or as to the basis on which any Rebate should be or should have been calculated under the Railway Freight Rebates Scheme.

The Procedure to be followed is that published in the *London Gazette* of the 20th January and 9th March, 1928, and 29th November, 1929.

Printed copies of the Prescribed Procedure for any of the above-mentioned Applications can be obtained from the Office of the Tribunal.

T. J. D. ATKINSON,
Registrar.

Bush House,
Aldwych,
London, W.C.2.
2nd December, 1935.

REQUIRED for large European Rolling Stock Works in India, a WORKS INSPECTOR to take charge of Inspection Dept. Age 25 to 35 years, preferably single. Should have had similar experience in large modern works and be competent to undertake the inspection and testing of all materials, component parts, and complete steel carriage frames and steel wagons. Should have had good technical education. Five-year agreement; free passages; provident fund; free unfurnished quarters; salary according to qualifications. Apply by letter with copies of testimonials, stating age and whether married or single, to "WAGON," c/o W. ABBOTT, LTD., 32, Eastcheap, London, E.C.3.

THE MADRAS & SOUTHERN MAHRATTA RAILWAY COMPANY LIMITED invite Tenders for:—

(1) 1,007 TONS (APPROX.) STEEL MATERIAL (comprising M.S. Rounds, Squares, Angles, Flats, &c., approx. 637 tons, and M.S. Plates and Sheets, 370 tons approx.).

(2) 593 STEEL TYRES FOR LOCOMOTIVES (355 Broad Gauge and 238 Metre Gauge).

(3) 3,420 STEEL BOILER TUBES AND 228 STEEL FLUE TUBES (Solid Drawn).

Specifications and Forms of Tender can be obtained at the Company's Offices, 25, Buckingham Palace Road, Westminster, S.W.1.

Fee ONE GUINEA each *which will not be returned*.

Tenders must be submitted not later than 2 o'clock p.m. on TUESDAY, 31st DECEMBER, 1935.

The Directors do not bind themselves to accept the lowest or any Tender and reserve to themselves the right of reducing or dividing the order.

By Order of the Board.
G. W. V. DE RHE PHILIPE.
Secretary.

Universal Directory of Railway Officials and Railway Year Book

Price 20/- net.

THE DIRECTORY PUBLISHING CO. LTD., 33, Tothill Street, London, S.W.1.

London & North Eastern Railway Company

NOTICE IS HEREBY GIVEN that, for the purpose of preparing the warrants for Interest on the Company's 3 per cent. and 4 per cent. Debenture Stocks and 4½ per cent. Sinking Fund Debenture Stock for the half-year ending 31st December, 1935, the balances will be struck as at the close of business on 11th December, and Interest will be payable only to those Stockholders whose names are registered on that date.

Transfers of the above mentioned Stocks should, therefore, be lodged with the Registrar of the Company at Hamilton Buildings, Liverpool Street Station, London, E.C.2, before 5 p.m. on 11th December.

By Order,
JAMES McLAREN,
Secretary.

Marylebone Station,
London, N.W.1.
2nd December, 1935.

Central Argentine Railway Limited

NOTICE IS HEREBY GIVEN that the Transfer Books of the 4 per cent. Debenture Stock and the 3½ per cent. Central Debenture Stock of the Company will be *closed* from the 2nd to the 14th December, both days inclusive, for the preparation of Warrants for interest for the half-year ending 31st December, 1935.

F. FIGHIERA,
Secretary.

34, Coleman Street,
London, E.C.2.
28th November, 1935.

Southern Railway Rating Appeal

The hearing was concluded on November 29 and the House of Lords reserved judgment in the appeals by the Railway Assessment Authority and representative local authorities against the decision of the Railway and Canal Commission, under which the rating assessment of the Southern Railway Company's undertaking was reduced from £2,180,000 (the figure fixed by the Authority) to £1,077,131. Sir William Jowitt, K.C., replying for the Assessment Authority, on November 29, said that among the relevant circumstances to which the Railway and Canal Commission had failed to have regard were the large increase in the cost of production of rolling-stock since 1913; the passing of the Railways Act, 1921, which, in effect, limited the net receipts of the railway to a figure which in a valuation on the profits basis would result in an insufficient net annual valuation; and the relative contributions of landlord and tenant towards the provision of the necessary capital.

THE IRISH TRANSPORT PROBLEM.—In our report last week of the speech by Mr. W. H. Morton, General Manager, Great Southern Railways, at the inaugural meeting of the Dublin University Commerce and Economic Society, it should have been explained that his reference to the pooling of net receipts, the motive power behind co-ordination, applied only to Northern Ireland.

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Railway Share Market

The announcement of the large Government loans bearing a lower rate of interest than ever previously recorded and the subsequent rapid over-subscription of the amount offered acted as a strong stimulant on all fixed interest-bearing stocks. Home railway prior lien stocks came into persistent request and the floating amount of stock was rapidly absorbed. An advance of about two points has been established in most cases. These stocks give a yield much higher than is obtainable in any other high-grade securities.

There are still moderate amounts available of such stocks as Great Western 4 per cent. debenture stock giving a yield of about one per cent. more than is obtainable on the 2½ per cent. new funding loan. There is also a limited amount of L.M.S. 4 per cent. debenture stock to yield 3½ per cent. and Southern 4 per cent. debenture stock to yield nearly this rate whilst the L.N.E. 3 per cent. debenture stock can be bought to give a clear 3½ per cent. return. It should be emphasised that in the case of all these stocks there is no fixed date of redemption. It is in this respect that they constitute an entirely different security to that of the new funding loan which is definitely redeemable in about 25 years time. The interpretation placed on the Government's loan terms is that a continuation of a low rate of interest on investment is expected to continue for some time and in view of this impression it is anticipated that most home railway fixed dividend-bearing stocks will see higher prices during the next few months. Speculative buying this week has been mainly concentrated on Southern preferred ordinary and deferred ordinary stocks in the hopes as to the impending decision of the House of Lords in the rating appeal.

The traffic receipts announced on Wednesday showed an advance for each of the four groups over the corresponding week of last year. London and North Eastern issues were in some request on the increase shown. Great Western Railway ordinary stock has been bought owing to the high yield on the basis of maintenance of the dividend. London Transport "C" stock moved up with the rest of the market. There was some profit-taking in Argentine railway stocks but later there was a steadier tendency.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1934-35	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1934	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1934	Prices: Lowest 1934	Prices: Dec. 4, 1935	Yield % (See Note)
				£	£		£	£	£					
South & Central America.	Antofagasta (Chili)&Bolivia	830	1.12.35	12,940	— 3,280	48	598,520	713,050	— 114,530	Ord. Stk.	263/4	19	211/2	Nil
	Argentine North Eastern	753	30.11.35	7,808	+ 504	22	180,876	166,093	+ 14,783	,,	11	67/8	6	Nil
	Argentine Transandine	—	—	—	—	—	—	—	—	A. Deb.	52	45	48	85/16
	Bolivar	174	Oct., 1935	5,300	— 300	43	60,600	59,950	+ 650	6 p.c. Deb.	10	61/2	10	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	135/4	107/16	13	315/16
	Buenos Ayres & Pacific	2,806	30.11.35	74,501	+ 3,741	22	1,620,253	1,510,040	+ 110,213	Ord. Stk.	161/2	81/2	8	Nil
	Buenos Ayres Central	190	9.11.35	$118,600	+ $9,900	19	$2,369,906	$2,430,800	— $60,900	Mt. Deb.	23	10	13	Nil
	Buenos Ayres Gt. Southern	5,085	30.11.35	107,873	— 7,916	22	2,600,842	2,645,570	— 44,728	Ord. Stk.	35	22	19	Nil
	Buenos Ayres Western	1,930	30.11.35	49,530	+ 5,086	22	875,826	903,694	— 27,868	,,	271/2	181/2	15	Nil
	Central Argentine	3,700	30.11.35	115,038	+ 15,269	22	2,578,193	2,561,227	+ 16,966	,,	23	131/2	111/2	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	14	7	6	Nil
	Cent. Uruguay of M. Video	273	30.11.35	14,165	+ 2,350	22	210,963	368,648	— 157,685	Ord. Stk.	151/2	3	5	Nil
	Do. Eastern Extn.	311	30.11.35	2,983	+ 267	22	34,374	36,665	— 2,291	—	—	—	—	—
	Do. Northern Extn.	185	30.11.35	1,418	+ 390	22	24,587	19,794	+ 4,793	—	—	—	—	—
	Do. Western Extn.	211	30.11.35	901	+ 67	22	16,723	16,290	+ 433	—	—	—	—	—
	Cordoba Central	1,218	30.11.35	29,610	+ 2,120	22	677,570	665,430	+ 12,140	Ord. Inc.	6	3	2	Nil
	Costa Rica	188	Oct., 1935	11,634	— 2,012	17	55,349	63,485	— 8,136	Stk.	305/4	231/2	34	57/8
	Dorada	70	Oct., 1935	11,900	+ 200	43	117,400	102,400	+ 15,000	1 Mt. Db.	103	95	1021/2	57/8
	Entre Rios	810	30.11.35	10,834	— 3,435	22	254,410	253,832	+ 578	Ord. Stk.	211/2	12	10	Nil
	Great Western of Brazil	1,082	30.11.35	8,600	— 6,200	48	369,700	422,800	— 53,100	Ord. Sh.	7/8	3/8	1/2	Nil
	International of Cl. Amer.	794	Oct., 1935	$294,856	— $11,293	43	$3,844,110	$3,946,051	— $101,941	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	1/-	1/-	1/2	Nil
	La Guaira & Caracas	223/4	Nov., 1935	3,260	+ 175	48	41,145	39,150	+ 1,995	Stk.	123/4	75/8	81/2	Nil
	Leopoldina	1,918	30.11.35	19,256	— 1,717	48	863,055	1,063,817	— 200,762	Ord. Stk.	145/8	7	6	Nil
	Mexican	483	30.11.35	$329,700	+ $36,000	21	$5,430,100	$4,899,500	+ $530,600	,,	31/4	11/2	3/4	Nil
	Midland of Uruguay	319	Oct., 1935	6,499	— 6,439	17	22,345	38,789	— 16,444	,,	11/2	1/2	11/2	Nil
	Nitrate	401	30.11.35	8,784	+ 3,520	48	139,621	122,783	+ 16,838	Ord. Sh.	32/32	51/-	25/8	Nil
	Paraguay Central	274	30.11.35	$2,451,000	+ $1,446,000	22	$42,997,000	$21,346,000	+ $21,651,000	Pr. Li. Stk.	84	67	781/2	75/8
	Peruvian Corporation	1,059	Nov., 1935	76,125	+ 17,432	22	375,790	309,538	+ 66,252	Pref.	141/2	8	10	Nil
	Salvador	100	23.11.35	¢12,488	— ¢4,382	21	¢249,436	¢209,177	+ ¢40,259	Pr. Li. Db.	75	70	65	711/16
	San Paulo	1531/2	24.11.35	22,019	— 9,961	47	1,189,971	1,273,572	— 83,601	Ord. Stk.	86	67	46	57/16
	Taltal	164	Oct., 1935	3,390	+ 1,090	17	12,640	9,205	+ 3,435	Ord. Sh.	21/8	17/16	15/8	71/4
	United of Havana	1,353	30.11.35	13,394	— 3,195	22	342,574	362,138	— 19,564	Ord. Stk.	6	2	21/2	Nil
	Uruguay Northern	73	Oct., 1935	765	— 367	17	2,527	4,444	— 1,917	Deb. Stk.	61/4	3	41/2	Nil
Canada.	Canadian National	23,688	21.11.35	695,882	+ 64,810	46	30,725,193	29,443,845	+ 1,281,348	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	— 4 p.c.	Perp. Dbs.	781/4	511/2	671/2§	515/16
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	1041/2	971/4	981/2§	41/16
	Canadian Pacific	17,224	30.11.35	729,400	+ 63,200	48	23,619,400	22,967,400	+ 652,000	Ord. Stk.	185/16	111/16	111/2	Nil
India.†	Assam Bengal	1,329	31.10.35	43,410	— 2,485	30	707,308	821,333	— 114,025	Ord. Stk.	881/2	72	821/2	35/8
	Barsi Light	202	10.11.35	8,212	+ 3,712	32	86,812	87,720	— 908	Ord. Sh.	1041/2	983/4	781/2	65/8
	Bengal & North Western	2,112	20.11.35	72,919	+ 3,335	8	326,521	316,308	+ 10,213	Ord. Stk.	2971/2	262	2971/2	55/8
	Bengal Dooars & Extension	161	10.11.35	4,571	— 507	32	84,950	95,994	— 11,044	,,	1251/4	124	1231/2	511/16
	Bengal-Nagpur	3,268	31.10.35	189,525	+ 19,982	30	3,674,515	3,371,255	+ 303,260	,,	1051/2	96	1011/2§	315/16
	Bombay, Baroda & Cl. India	3,072	20.11.35	238,723	+ 16,650	33	4,978,425	4,963,500	+ 14,925	,,	115	1081/2	1101/2§	57/16
	Madras&South'n Mahratta	3,230	10.11.35	132,750	+ 18,418	32	3,224,644	3,500,474	— 275,830	,,	131	1225/4	1151/2§	73/4
	Rohilkund & Kumaon	572	20.11.35	10,793	— 1,385	8	55,214	57,547	— 2,333	,,	263	250	2931/2	57/16
	South India	2,526	10.11.35	97,814	+ 6,115	32	2,457,194	2,582,167	— 124,973	,,	119	115	1071/2	7
Various.	Beira-Umtali	204	Sept., 1935	59,616	— 3,871	52	769,888	651,264	+ 118,624	—	—	—	—	—
	Bilbao River & Cantabrian	15	Oct., 1935	1,695	+ 1,171	43	15,053	16,719	— 1,666	—	—	—	—	—
	Egyptian Delta	622	20.11.35	10,250	+ 2,016	33	154,551	149,246	+ 5,305	Prf. Sh.	215/16	15/4	15/4	511/16
	Great Southern of Spain	104	23.11.35	1,780	— 911	47	84,720	105,542	— 20,822	Inc. Deb.	4	31/2	31/2	Nil
	Kenya & Uganda	1,625	Oct., 1935	193,202	+ 28,246	43	2,002,143	1,859,872	+ 142,271	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	50	33	37	97/16
	Mashonaland	913	Sept., 1935	108,693	— 7,903	52	1,384,055	1,191,218	+ 192,837	1 Mg. Db.	101	913/4	102	47/8
	Midland of W. Australia	277	Oct., 1935	17,060	+ 296	17	54,262	56,354	— 2,092	Inc. Deb.	100	93	941/2	59/16
	Nigerian	1,905	12.10.35	25,812	— 4,390	28	641,389	734,646	— 93,257	—	—	—	—	—
	Rhodesia	1,538	Sept., 1935	193,326	+ 10,016	52	2,319,058	1,992,128	+ 326,930	4 p.c. Db.	1047/8	971/2	104	37/8
	South African	13,246	9.11.35	596,690	+ 62,865	32	17,836,969	16,186,538	+ 1,650,431	—	—	—	—	—
	Victorian	4,728	Aug., 1935	736,134	+ 4,008	9	1 449 523	1,433,140	+ 16,383	—	—	—	—	—
	Zafra & Huelva	112	Oct., 1935	12,687	— 1,072	43	114 122	116,325	— 2,203	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador and Paraguay Central receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rates of exchange and not on the par value